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China Report

AGRICULTURE

No. 167

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I. GENERAL INFORMATION

POISONING OF WORKERS BY FARM CHEMICALS INCREASING

Emergency Measures

Beijing GUANGMING RIABO in Chinese 14 Aug 81 p 1

[Report: "Health Ministry and Agricultural Ministry Issue Emergency Notice Asking Each Locality To Pay Attention To Preventing Poisoning by Farm Chemicals"]

[Text] According to reports submitted to the concerned departments of the central government by each locality, there is a large amount of farm chemicals being used this year, many people have come into contact with the farm chemicals, and there have been cases of poisoning by farm chemicals. Some cases have been serious. Accordingly, the Ministry of Health and the Ministry of Agriculture recently issued an emergency notice asking the leadership of each locality to pay a great deal of attention to the problem of preventing poisoning by farm chemicals.

The emergency notice pointed out: Recently there have been more incidents of poisoning by farm chemicals. The reason is that farm villages have become less attentive in their management of poisonous substances, special farm chemicls staffs have been abolished, commune members lack knowledge of health protection, and technical guidance is not caught up. Most cases have been caused by the improper use of farm chemicals.

To concretely do well the work of prevention and emergency treatment of cases of poisoning by farm chemicals, the emergency notice made the following four demands:

1. The people's government at each level must grasp agricultural production well, and at the same time it must grasp well the safety and health of the broad number of commune members. At the same time, the leadership of separate management must also grasp well the work of protection in the use of farm chemicals.

2. In implementing the production responsibility system, the management of farm chemicals must be strengthened and national regulations related to the safe use of farm chemicals must be conscientiously implemented and carried out. Measures should be suited to local circumstances. Various kinds of specialized protection teams must be organized. The distribution of extremely poisonous farm chemicals to commune member individuals for use should be strictly prohibited.

3. Agricultural departments at each level should provide technical training and technical guidance in the safe use of farm chemicals. They should propagandize the scientific knowledge of the safe use of farm chemicals, and a management system for the safe use of farm chemicals should be established and made sound, according to relevant state regulations.

4. Health departments at each level, and especially the basic-level medical agencies in farm villages, must organize strong medical groups to carry out emergency rescue work well at all times. Health and epidemic prevention departments must strengthen the use, supervision, and inspection of farm chemicals. Propaganda activities should be launched, in coordination with agricultural departments, for the safe use of farm chemicals. Medical departments must assure the supply of medicines for emergency treatment.

Appeal for Caution, Guidance

Jinan DAZHONG RIBAO in Chinese 6 Aug 81 p 1

[Article by Zhang Junjie [1728 0193 2638] of the Shandong Provincial Agricultural Committee: "Strictly Prevent Poisoning by Farm Chemicals"]

[Text] Comrade Editor:

This summer, the situation of farm chemical poisoning at various localities in our province has become serious. According to imcomplete statistics, the number of people who have died from poisoning by farm chemicals is already two or three times the number who died of similar causes throughout all of last year. Therefore, it is suggested that the leadership at each level should pay a great deal of attention to this problem.

At present, this is the period of intensive control of insect pests on cotton. The amount of chemicals used in large, the weather is hot, and it is the peak period of poisoning by farm chemicals. It is hoped that each locality will take effective measures to strictly prevent the continued occurrence of incidents of poisoning by farm chemicals. As one measure, each level of leadership could organize concerned departments to carry out an overall inspection of safety in the use of chemicals, conscientiously summarize experiences and lessons, and help the basic levels study and draw up measures for the safe use of the chemicals. A second measure would be to launch broad propaganda and provide education in the safe use of chemicals, strengthen technical guidance, and pay attention to doing a good job of protecting labor. In hot weather, the spraying of chemicals should be stopped before and after noontime. A third measure would be to truly strengthen the management of farm chemicals and strictly obey safe operating procedures for farm chemicals. Production teams must insist on purchasing chemicals as a collective, must place the chemicals in unified storage, and must carry out collective distribution of the chemicals. Only special teams or fixed personnel of families receiving farm chemicals should be allowed to use farm chemicals. Highly poisonous farm chemicals must be strictly controlled, and the highly poisonous farm chemical sprays of furandan, fluoroacetamide, and 3911 must be prohibited so as to enusre the safe use of the chemicals.

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CSO: 4007/566

CLIMATIC CLASSIFICATION OF HOT DRY WINDS IN NORTH WHEAT AREA

Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 5, May 81 pp 11-15

[Article by the Wheat and Dry Hot Winds Scientific Research Coordination Group*: "Climatic Zoning of Dry Hot Winds Affecting Northern Wheat"]

[Text] Abstract

This article separates the different climatic regions and the different ecological types of wheat and uses different combinations of meteorological factors to determine the meterological indicators of the dry hot winds affecting wheat in the north on the basis of the degree of damage by the dry hot winds, weather characteristics and the physiological mechanisms. The data on dry hot winds over 20 years at 155 meteorological stations have been statistically analyzed according to their indicators and the patterns of occurrence have been studied. Indicators for zoning climatic regions have been determined by comparative analysis. Our nation's first climatic zoning of dry hot winds affecting northern wheat has been carried out and corresponding measures of prevention and policies have been proposed.

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*1. The wheat and dry hot winds scientific research coordination group consists of members of the provincial, municipal and autonomous regions' meteorological bureaus and related provincial academies of agricultural sciences of Shandong, Hebei, Shanxi, Xinjiang, Nei Monggol, Ningxia, Tianjin, Jiangsu, Anhui, Qinghai, and sponsored by the provincial meteorological bureaus of Shaanxi, Gansu and Henan.

2. This article was written by comrades Yu Yousen [0151 0327 2773], Yang Zhenglin [2799 3791 2651], Lin Meiying [2651 5019 5391], Yu Ling [0060 3781], Jian Weimin [4675 1983 3046] and Guan Wenya [7070 2429 7161]. Those participating in analytical research work also included comrades Li Deguang [2621 1795 1684], Ju Youcheng [1446 2589 2052], Zhang Wenqi [1728 2429 3823], Lu Dingxing [7120 0002 5281], Gu Yushi [7357 3768 2514], Chen Changyu [7115 2490 3022], Dong Yongxiang [5516 3057 4382], Lu Xiugou [7120 4423 0948], Meng Jifang [1322 4949 2455], Zhang Tingzhu [1728 1694 3796], and Lu Wan [5684 4111].

Foreword

Dry hot winds are one of the major agrometeorological disasters that affect the high and stable yields of our nation's northern wheat. During the 1960's, dry hot winds had already attracted the attention of the agricultural production departments. The so-called dry hot winds refer to the agrometeorological disaster-type of wind with high temperature, low humidity and definite velocity that occurs between flowering and the milky ripe stages of wheat. This type of wind endangers winter and spring wheat in the northern wheat regions. The regions affected by damage due to dry hot winds begin with the Huai River, Qinling, Qilianshan and north of Aerjinshan in the south and [stretches] to the Great Wall, Yingshan, Helanshan, Longshoushan and south of Altay in the north, including most of Hebei, Shandong, Henan, Shanxi, Tianjin, Jiangsu, Anhui, Shaanxi, Gansu, Ningxia, Mongolia, Xinjiang, Qinhai provinces, municipalities and autonomous regions or parts of the wheat regions. The area affected is about 200 million mu. In years seriously affected by dry hot winds, yields may be reduced by 10 to 20 percent. In less serious years, yields may be reduced by 5 to 10 percent. It is a problem worth attention in the production and cultivation of northern wheat and the cultivation of varieties.

A lot of research concerning the damage caused by dry hot winds has been done in our nation and abroad. But, a systematic analytical study of the patterns of occurrence of dry hot winds in our nation's entire northern wheat regions is still lacking. Because of this, climatic zoning of the dry hot winds over the entire region has not been done.

II. Meteorological Indicators of Dry Hot Winds

Meteorological indicators of dry hot winds are the bases for climatic analysis and zoning of dry hot winds. The damage to wheat by the dry hot winds is the result of the comprehensive influence of the ecological environment, the period of occurrence of dry hot winds, the intensity of the weather processes of the dry hot winds and the properties of resistance of the wheat itself (period of development, variety, degree of healthiness of growth). Therefore, studying the meteorological indicators of dry hot winds affecting wheat should take the degree of damage done to wheat by the dry hot winds as the prerequisite. This should be determined by starting out with the weather characteristics and the intensity of the dry hot winds and by taking the damage to the physiological mechanism as the theoretical basis.

1. The Degree of Damage Done to Wheat by the Dry Hot Winds

Wheat has a stricter demand for meteorological conditions during the flowering, filling and milky ripe periods. It does not tolerate high temperatures and low humidity. If dry hot winds are encountered during this time, the awns of wheat become solid and dry, the glumes white, the leaves brittle, the leaves, spikes and stems greyish white, the seed grains have a thick skin, the furrow of the kernel is deep and the seed grains are not plump. When seriously affected, the leaves curl up into a cord shape or remain green, wither and die. According to surveys and field measurements, light damage can cause the thousand grain weight to drop 1 to 3 grams, serious damage can cause it to drop 3 to 5 grams.

2. Weather and Climatic Background and Characteristics of Dry Hot Winds

The period of damage to wheat by dry hot winds occurs at the end of spring and the beginning of summer when the monsoons alternate before the arrival of the rainy season. Then the weather is dry and there is less rain. Because the area is under the control of the continental modified air mass and because of the increase in temperature of the lower cushioning [air] surface of the desert and the loess plateau as well as the increase in temperature due to the downward circulation caused by steep drop in topography, temperatures over the entire northern wheat region increase rapidly and abruptly. It is arid and windy, and there is less rain, forming the climatic background for dry hot winds in the northern wheat regions.

The weather trend shows that on the high altitude 500 millibar map, the subhigh extends to the south of the Changjiang. Over the Qinghai-Xizang Plateau [extending] to the Xinjiang and Mongolian Plateaus a warm high pressure system or a warm high pressure ridge develops. A large trough persists over East Asia. A warm advection occurs in the region of the dry hot winds. In coordination with the eastward shift of the hot low pressure system or the modified high pressure system on the ground surface map from Xinjiang to Hetao, and during the development of the eastward shift, the entire stratum between the ground surface and the high altitude sinks, temperature increases and the weather becomes dry and warm. The air is dry, the temperature stratification is mostly thermodynamic and stable. According to research by the Lanzhou Plateau Atmospheric Institute, the sinking region of rising temperatures can undergo a rise of 6.8°C in temperature in 24 hours. The specific humidity can drop by over 1 gram/kilogram. In addition, the increase in temperature of the lower cushioning surface of the desert and the loess plateau passed over by the eastward shift of the dry, hot air mass and the increase in the temperature due to the downward flow of air because of topography form the weather process for the dry hot winds over a large area of the northern wheat region.

The weather characteristics of the dry hot winds are reflected by the sudden visible changes in temperatures and humidity before and after the weather process. According to statistics compiled by the Shandong Provincial Meteorological Bureau, the highest daily temperature averages a drastic increase of 4°C to 7°C, reaching a maximum of 13.6°C from the day before the weather process for the dry hot winds begins to the day of the peak value of the dry hot winds. The relative humidity at 1400 hours averages a drop of 8 to 14 percent, reaching a maximum value of 40 percent. It is dry and hot both day and night; the temperature and humidity change very slightly. According to measurements taken by the Taian Prefecture Meteorological Bureau at 0600 hours and 1400 hours, the temperatures at the spikes of wheat vary only by 0.2°C, relative humidity differs only 4 percent. The temperatures at two-thirds the height of plants differ only 0.5°C, humidity differs 11 percent. In the northwest region, because the highest day time temperature rises dramatically, the daily temperature difference increases.

There are two types of dry hot winds. One is the high temperature and low humidity type and the other is greening after rain and withering. The high temperature and low humidity type mainly occurs during the flowering and filling periods.

It is the major weather type of dry hot winds affecting wheat. Greening after rain and withering which mainly damages during the latter part of the milky ripe period, is manifested by a sudden clearing after rain and relative high temperatures and low humidity.

3. The Physiological Mechanism for Damage by Dry Hot Winds

When wheat in the filling and milky ripe stage encounters sudden changes in temperatures and humidity and persistent high temperatures and low humidity, the intensity of plant transpiration increases drastically, the vitality of the root system weakens, the moisture equilibrium becomes unbalanced, the physiological functions hasten and the plant ages and dies. This causes the wheat to wither and forces maturation, thus the yield drops. According to research, dry hot winds can cause the intensity of transpiration of wheat to double. The moisture content of the leaves drops 6 percent, and the seepage of electrolytic matter increases 9 $\mu\gamma^{-1}$. The plant loses a large amount of water while the vitality of the root system weakens and ages, absorption of P^{32} drops 147.5 pulses/minute, bleeding and absorption of moisture and inorganic salts by the root system visibly drop. This causes an imbalance in the moisture content and weakening photosynthesis of wheat. The net photosynthetic intensity and the sugar content and starch content visibly drop, the filling rate slows, and the thousand grain weight drops (see Table 1).

4. Meteorological Indicators of Dry Hot Winds

The damage to wheat caused by dry hot winds is mainly due to heat and dryness. The winds intensify the effects of heat and dryness. Therefore, selectively using a combination of the three major elements of temperature, humidity and wind to determine the meteorological indicators of the dry hot winds can reflect the actual damage to wheat by the dry hot winds. In the past, the indicators of "three threes" for dry hot winds have been widely used, but results of some of our field and simulation experiments show that the highest temperature of $\geq 30°C$ is slightly low. At the same time, because the intensity of the weather process of dry hot winds is different and because the climatic and ecological types of wheat vary, the degree of damage to wheat is also different. Therefore, we have separated the different climatic regions of northern China, the Hetao region, the Hexi Corridor, Xinjiang, and the climatic and ecological types of wheat, and we have used the different combined values of the three elements to determine meteorological indicators of dry hot winds that possess regional characteristics and that are comparable.

To reflect the damage by high temperature and to make statistical comparison of the data easy, we used the highest daily temperature, not the highest temperature at 1400 hours. We used the relative humidity at 1400 hours and the saturation difference for the humidity. To reflect the degree of damage to wheat by the dry hot winds, we differentiated between slight and severe levels as two indicators. First we determined the days of slight and severe dry hot winds according to the indicators of the dry hot winds, then we determined the weather processes of slight and severe dry hot winds according to the number of days and finally, we determined the annual type of slight and severe dry hot winds according to the number of occurrences of the dry hot wind process and the number of days. These are separately described below:

Table 1. Determination of the Damage to the Physiological Mechanism of Wheat by Dry Hot Winds (Department of Biology of Lanzhou University)

Items of physiological measurements	Simulation Experiment		Difference
	Control	Dry Hot Winds	
	Temperature 10°C to 26°C, relative humidity 30-50 percent	Temperature 19°C to 36°C, relative humidity 50-25 percent, wind velocity 2 to 4 meters/second	
Intensity of transpiration (jin/pot/3 days)	1.03	2.33	1.30
Water content of leaves (percent), average of the boot leaf, the 2nd, 3rd and 4th leaves	72.87	68.89	- 3.98
Outward seepage of electrolytic substance of the boot leaf ($\mu\gamma^{-1}$)	45.0	54	9
Content of chlorophyll in the boot leaf (milligram/gram)	39.17	27.88	-11.29
Absorption of P^{32} by the root system (pulse/minute)*	211.25	63.75	-147.5
Assimilation of CO_2^{14}, C^{14} (output value over 24 hours)	4625.75	4020.5	-605.25
Thousand grain weight after harvest (gram)	40.77	29.04	-11.73

*The value of absorption of radioactive P by the root system is the average of the values of the seed grains, stalks, boot leaf, and the second leaf. The products of assimilation is also an average.

1) High Temperature and Low Humidity

(1) Northern China and the Fen and Wei valleys: The period of flowering and the period from filling to the milky ripe stage (same in the following) are determined by counting 1 month backward from the time of harvest of wheat and this is used to calculate the days of dry hot winds, the weather process and the annual type. Their indicators are listed in Table 2.

(2) Hetao region (including the Ningxia irrigated area, same in the following): when the highest daily temperature during the flowering and milky ripe period of wheat ≥ 34°C and the humidity and wind velocity are the same as those of the north China region, it is a day of severe dry hot winds. When the highest daily

Table 2. Indicators of the Days of Slight and Severe Dry Hot Winds, Weather Processes and Annual Types Affecting Wheat in the North China Region

Days of dry hot winds	Severe	Highest daily temperature ≥35°C; relative humidity at 1400 hours is ≤25 percent; wind velocity at 1400 hours is ≥3 meters/second.
	Slight	Highest daily temperature ≥32°C; relative humidity at 1400 hours is ≤30 percent; wind velocity at 1400 hours is ≥2 meters/second.
Weather processes of dry hot winds	Severe	1. Every occurrence of ≥2 days of severe dry hot winds constitutes one dry hot wind process. 2. Two continuous days of severe dry hot winds occur in one process of dry hot winds.
	Slight	1. Except for the days of slight dry hot winds included in the process of severe dry hot winds, all continuous occurrences of ≥2 days of slight dry hot winds are considered one process of slight dry hot winds. 2. A continuation of 1 day of slight dry hot winds and 1 day of severe dry hot winds or an occurrence of 1 day of severe dry hot winds also constitute one process of slight dry hot winds.
Annual types types of dry hot winds	Severe	1. Occurrence of two or more processes of severe dry hot winds during the period of damage, or the occurrence of one severe and one slight occurrence or more than 4 slight processes are considered an annual type of severe dry hot winds. 2. The occurrence of ≥4 days or more of severe dry hot winds during one process, or the occurrence of ≥7 days or more of slight dry hot winds is also considered as an annual type of severe dry hot winds. 3. The thousand grain weight of wheat generally drops 3 to 5 grams.
	Slight	1. Occurrence of more than two processes of slight dry hot winds during the period of damage, or one severe process, or a continuation of 4 to 6 days of slight dry hot winds is considered an annual type of slight dry hot winds. 2. The thousand grain weight of wheat generally drops 1 to 3 grams.

temperature ≥ 32°C, and the humidity and wind velocity are the same as those of the days of slight dry hot winds in northern China, it is a day of slight dry hot winds.

The process of dry hot winds and the intensity of the annual type are the same as those of the north China region.

(3) Hexi Corridor: The positive anomaly of the highest daily temperature and the cumulative values are used to reflect the sudden variation and the persistence of high temperatures during the flowering, filling and milky ripe periods of winter and spring wheat (based on statistics of 1 month respectively). When the highest daily temperature ≥ 30°C continues for 2 days, the cumulative value of the positive anomaly of the highest temperature during the course of the dry hot winds is 8°C to 20°C, the relative humidity at 1400 hours ≤ 25 percent, easterly winds occur more than once in periodic observations, this constitutes one process of slight dry hot winds. When the cumulative anomaly of the highest temperatures ≥ 20°C, the relative humidity at 1400 hours ≤ 23 percent, the wind velocity is the same as above, this constitutes a process of severe dry hot winds. The annual types of slight or severe dry hot winds are determined by the number of occurrences of slight and severe processes of dry hot winds according to the criteria for the north China region.

(4) Xinjiang region: The largest daily saturation difference is used to comprehensively reflect the characteristics of the highest temperature and the lowest relative humidity of the dry hot winds. When the largest daily saturation difference ≥ 40 millibars (when the daily saturation difference ≥ 40 millibars at this locality, the highest daily temperature averages ≥ 30°C) and the wind velocity at 1400 hours ≥ 3 meters/second, this is defined as a day of slight dry hot winds. When the largest daily saturation difference is ≥ 50 millibars, the wind velocity is the same as above, this is defined as a day of severe dry hot winds. The number of occurrence of the process of slight and severe dry hot winds and the annual types are determined statistically according to the criteria for the north China region.

2) Greening After Rain and Withering

If within 10 days before the wheat matures a small rain occurs once with an amount of rainfall between 5 and 10 millimeters, then the weather suddenly clears and [the following conditions] occur within 3 days there is more than 1 day with the highest daily temperature ≥ 30°C,, the relative humidity is relatively low and there is one day with a wind velocity ≥ 3 Grade--this constitutes a day of greening after rain and withering.

Even though the indicators for each locality are not entirely consistent, they are close in reflecting the physical significance of dry hot winds and the degree of damage to wheat. Therefore, the results of statistical analysis using the above indicators basically coincide with the data obtained by surveys conducted in each province. This shows their practical value.

III. Climatic Analysis of Dry Hot Winds in the Northern Wheat Regions

According to the above indicators of dry hot winds, we statistically analyzed the meteorological data for the 20 years from 1959 to 1978 at 155 representative stations in the area damaged by dry hot winds in the northern wheat regions. We combined the data with the actual occurrences of dry hot winds over the years and studied the geographic and temporal distribution patterns of dry hot winds. We found that in the northern wheat regions, the characteristics of distribution of dry hot winds are severe in the east and west and slight in the middle. Dry hot winds are severe in northern China (east of Taihangshan), the Fen River valley, Turpan, Tarim Basin, Anxi, and Dunhuang Basin. Dry hot winds are slight in Guanzhong, Hetao, and the eastern part of the Hexi Corridor. The degree of damage by dry hot winds lessens as the elevation above sea level rises (the highest generally does not surpass 1700 to 1800 meters), the damage is more serious the lower the elevation above sea level. Throughout the nation, damage is most severe in Turpan. The distribution of the areas of slight or severe damage by dry hot winds is related to the nature of the lower cushioning surfaces of mountain ranges, topography, terrain, soil, vegetation. In general, dry hot winds are more severe over low basins, along edges of deserts, waterways of river valleys, the leeward slopes of mountain ranges and saline and alkaline land. The period of damage to wheat caused by dry hot winds differs according to the variation of the southeast monsoon and the differences in the flowering period and the period from the filling to milky ripe stages of wheat. The period of damage occurs progressively later from the southeast towards the northwest. The yearly change of dry hot winds obtained by analysis coincided with the actual results obtained in provincial surveys.

1. Geographic Distribution

The geographic distribution of dry hot winds in the northern wheat regions is illustrated in Diagrams 1, 2, 3. Comprehensive analysis of figures 1-3 shows that the steep drop in topography east of Taihangshan of the North China Plain and the effect of temperature increases due to the sinking fiery winds and the effects of the low saline and alkaline land of the ancient waterways of the Yellow River have formed a region of severe dry hot winds in central Hebei, southern Hebei, eastern Henan, northern Henan, western Shandong and northwestern Shandong. The severity of the dry hot winds lessens towards the coast, the Great Wall and the Huai River. A region of dry hot winds is formed around Linfen and Houma at the center caused by temperature increases due to the sunken topography of the Fen River valley. As the topography rises towards the surrounding areas, the severity lessens. Severity of dry hot winds in the Guanzhong Plain is second to that of the Fen River valley. The Hetao region is a region of slight dry hot winds. The Hexi Corridor is affected by Qilianshan and the desert; a region of severe dry hot winds in the basin is formed over Anxi and Dunhuang. As the elevation above sea level lowers from the low mountains of Qilianshan towards the desert, the severity of the dry hot winds increases. In Xinjiang, dry hot winds are generally more severe in basins than in mountain regions; they are generally more severe in southern Xinjiang than in northern Xinjiang and more severe in the east than in the west, forming a region of distribution of dry hot winds in Turpan, Tarim and the Junggar Basin. The Turpan Basin is the region of severest dry hot winds in the nation. In the Tarim Basin dry hot winds centered at Qarkilik lessen in severity towards the edges of the basin and the deserts. In the Junggar Basin dry hot winds centered at Mosuowan become less severe towards the sides. The Huang He Valley in eastern Qinghai Province is also affected by dry hot winds.

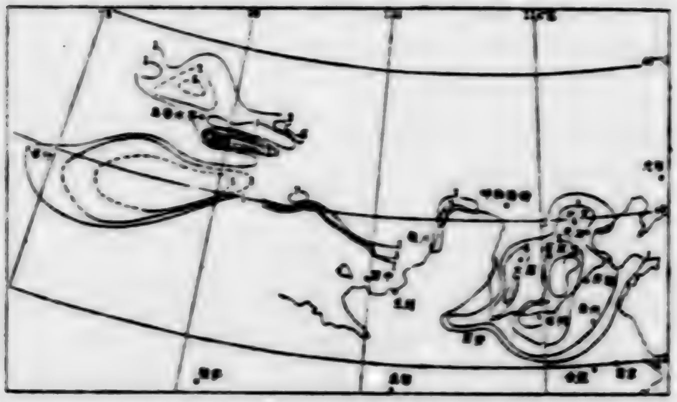

Figure 1. Average Number of Days Per Year of Dry Hot Winds in the Northern Wheat Regions

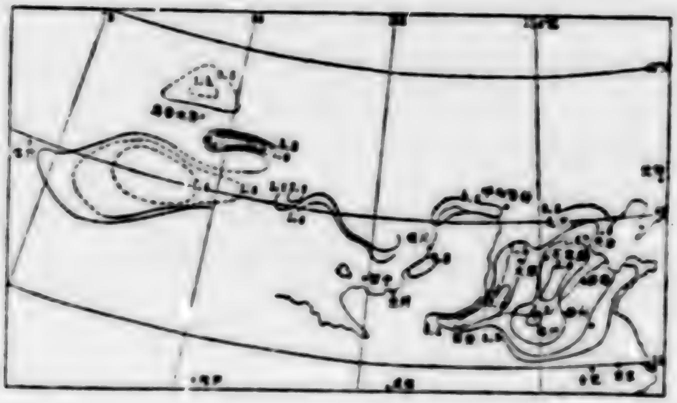

Figure 2. Average Number of Occurrences of the Dry Hot Wind Process in the Northern Wheat Regions

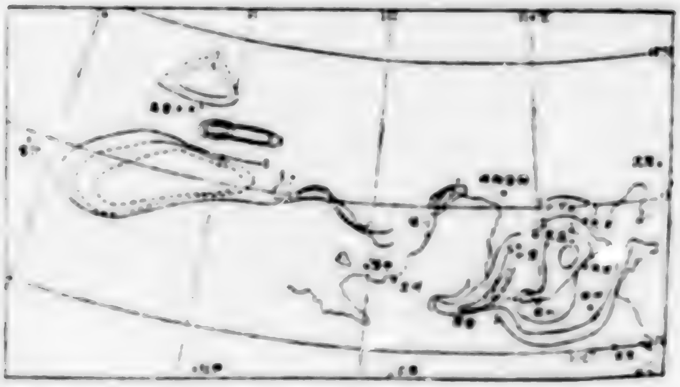

Figure 3. Average Probabilities of Occurrence of Dry Hot Winds Every 10 Years in the Northern Wheat Regions

2. Temporal Distribution

The period of damage to wheat due to dry hot winds at each locality and the period of concentrated occurrences are not the same (see Table 3). The period of damage begins from May and becomes progressively later from south to north and from the southeast to the northwest until the end of July. Concentrated occurrences of dry hot winds during the period of damage constitutes 50 percent to 80 percent in north China, Guanzhong, the Fen River valley and the Hetao region. Since the occurrences are more concentrated, they are beneficial to studying measures against them and favorable for building defenses well. The occurrences of dry hot winds in the Hexi Corridor and the Xinjiang Basin are relatively scattered.

Table 3. Period of Damage by Dry Hot Winds and the Period of Concentrated Occurrences in the Northern Wheat Regions

Region		Period of damage	Period of concentrated occurrence	Percentage of 10-day distribution of concentrated periods (percent)
Fen and Wei Valleys in the North China Plain		Middle and last 10 days of May to middle and last 10 days of June	End of the last 10 days of May to first 10 days of June	60 - 90
Hetao Region		Middle 10 days of June to middle 10 days of July	First and middle 10 days of July	50 - 90
Hexi Corridor in Gansu		First and middle 10 days of June to the middle 10 days of July	First 10 days of June, first and middle 10 days of July	20 - 40
Xinjiang	Southern Xinjiang	Middle 10 days of June to middle 10 days of July	Middle 10 days of June to middle 10 days of July	30 - 40
	Northern Xinjiang	Middle 10 days of June to middle 10 days of July	Middle and last 10 days of June to middle 10 days of July	30 - 40

Analysis of the intensity of the annual type of dry hot winds at each indicator station in the northern wheat region is tabulated in Table 4. It shows dry hot winds are a type of large area agrometeorological disaster. The stronger the annual type of dry hot winds, the wider the region and the area of damage, and the more severe the degree of damage. For example, 1960-1962, 1965, 1968,

Table 4. Yearly Variation and the Intensity of Annual Types of Dry Hot Winds in the Northern Wheat Regions From 1959 to 1978

Regions Annual type Year		North China Plain--Fen Wei Basin	Hetao Region	Hexi Corridor	Xinjiang Region
1959		none	slight	slight	slight
1960		severe	severe	slight	severe
1961		severe	severe	severe	severe
1962		severe	none	severe	severe
1963		none	none	slight	slight
1964		slight	none	none	none
1965		severe	slight	severe	severe
1966		slight	none	slight	slight
1967		severe	none	none	slight
1968		severe	none	slight	severe
1969		none	none	none	none
1970		none	slight	slight	slight
1971		slight	none	none	slight
1972		slight	slight	slight	slight
1973		none	none	none	slight
1974		severe	none	severe	severe
1975		slight	slight	slight	slight
1976		none	none	none	slight
1977		none	none	none	none
1978		slight	slight	severe	severe
10-year probability of occurrence	severe	3	1	3	4
	slight	3	3	4	5
	none	4	6	3	1

1974 were years with an annual type of severe dry hot winds throughout the entire northern wheat region. The years 1969, 1973, 1976, 1977 were years of an annual type without dry hot winds throughout the entire region. In other years, the slight and severe were interspersed, basically consistent with the data obtained by actual surveys. In years of severe dry hot winds, the number of days of dry hot winds a year in northern China and the Fen River region in Guanzhong was between 10 and 15, the number of occurrences of the dry hot wind process was more than 3 times. In the Hexi Corridor, the number of days of occurrence a year was between 5 and 15, the number of occurrences of the dry hot winds process was more than 2 to 4 times. The differences in Xinjiang were greater. Dry hot winds occurred almost every year in Toksun and Qarkilik, the number of days of occurrence a year was between 15 and 25, the number of occurrences was 9 to 10 times. In 1964, the masses reported that damage by dry hot winds was severe in northern China, the Xu-Huai and the Fen-Wei valleys and the Hexi Corridor. According to analysis, that year, except for one occurrence of a slight dry hot wind process in northern China and the Fen-Wei Basin, there were no other occurrences of dry hot winds, therefore we believe the main damage was not caused by dry hot winds but by the continuous overcast skies and rain during the beginning growth period, the serious rust disease, and weakness of the plants, and the rise in temperature and the drop in humidity after the rain which caused the plants to wither while still green forcing the plants to mature.

Analysis of the periodic variation of the dry hot winds in the northern wheat regions (diagram omitted) shows that during the 20-year period, dry hot winds were severe in the 1960's in northern China and in the Fen Wei valley and less severe in the 1970's. In the Hexi Corridor, dry hot winds were severe in the 1950's and gradually began to lessen their severity beginning in the late 1960's. The periodic variation in Xinjiang is not obvious.

IV. Climatic Zoning of Dry Hot Winds Affecting Wheat

To enable the zoning of dry hot winds to reflect the intensity of occurrence of dry hot winds at each locality and the degree of damage, each concerned provincial and regional (prefecture) meteorological departments first zoned the dry hot winds of each locality before overall zoning began. We carried out comprehensive research based on the data of the surveys and analysis and zoning of dry hot winds of each province and according to the results of climatological analysis of dry hot winds in the northern wheat regions. We decided to use the annual average number of days of dry hot winds and the number of occurrences of the dry hot wind process as the major indicators for zoning and to use the annual type and probability as auxiliary indicators (Table 5). We also utilized the dry hot wind zoning indicators to carry out analytical study using iterative addition and produced our nation's first climatic zoning of dry hot winds affecting wheat.

We now use the high temperature and low humidity type as the main type to divide the area damaged by dry hot winds in the northern wheat regions into nine zones differentiated by the four levels of severity severe, less severe, slight and none (Figure 4). The greening after rain and withering type needs further study.

Table 5. Zoning Indicators for Climatic Zones of Dry Hot Winds

Zone Indicator	I Severe Zone	II Less Severe Zone	III Slight Zone	IV None Zone
Annual average number of days of dry hot winds (day)	≥6 severe days ≥2.5	3 - 5.9 severe days 0.5 - 2.4	1 - 3 severe days <0.5	<1
Annual average number of times of occurrence of the weather process of dry hot winds	≥1.6 number of severe occurrences ≥0.5	1.0 - 1.5 number of severe occurrences 0.2 - 0.5	0.5 - 1.0 number of severe occurrences <0.2	<0.5
10-year probability of annual types of dry hot winds	≥5	3 - 5	1 - 3	<1

(I) Severe zone: This includes the I zone in northern China, the Hexi Corridor and Xinjiang. The I zone of northern China includes central Hebei, southern Hebei, northern Henan, eastern Henan, western Shandong, northwestern Shandong and the Linfen and Houma areas. In this zone, the annual average number of days of dry hot winds is 5 to 11, the annual frequency is 20 to 30 percent, the average number of days of the concentrated period is 1 to 4, the number of days of duration of the process is mostly 2 to 4, the period of longest duration is 8 to 15 days. The number of occurrences of the dry hot wind process is over 1.5 to 2.0 times, the average number of occurrences of severe dry hot winds is 0.5 to 0.7 times and the probability of occurrences of a year of dry hot winds in 10 years is 5 to 7 times. The most severe dry hot winds occurred at Nangong, Daming, Xingtai and Handan in Hebei, Dezhou in Shandong, Jizozuo and Zhengzhou in Henan and Houma and Linfen in Shaanxi.

The I zone of the Hexi Corridor includes Dunhuang and Anxi Basin. The number of days of dry hot winds, the number of occurrences of the dry hot wind process, the probability of occurrence of a year of dry hot winds in 10 years in this zone are all the same as those in the I zone of northern China. The annual frequency is 10 to 15 percent. The number of days of concentrated occurrence in a 10-day period is 1 to 2 days. The number of days of duration is mostly 3 to 4. The most number of days of duration in Anxi is 10.

The I zone in Xinjiang includes the Turpan Basin and the Qarkilik and Tikanlik area of the Tarim Basin. The annual number of days of occurrence ≥5; annual frequency averages greater than 20 percent. At Toksun, the annual number of days is 19; the annual frequency is 62 percent. In Qakilik it is 10 days. The number of days of duration of the dry hot wind process is mostly 2 to 4, the longest duration lasts 17 days, and the annual number of occurrences of the process is two to four times. At Toksun, the annual average is 8.1 times and at Qarkilik it is 6.9 times. The number of severe occurrences is >0.5 times. The probability of occurrence of a year of dry hot winds in 10 years is 6 to 10 times. The probability of occurrence of the severe annual type is three to five times in 10 years. At Toksun and Qarkilik it is 10 times in 10 years.

(II) Less severe zone: This includes the II zone in northern China, the eastern part of the Hexi Corridor and Xinjiang.

The II zone of northern China: This zone covers Tianjin except the part belonging to the I zone, the north bank of the lower reaches of the Huang He in western Shandong, southeastern Henan, western Henan, eastern Guanzhong, and the southern part of southeastern Shanxi. The annual number of days of occurrence in this zone is 3 to 5; the annual frequency is 10 to 15 percent; the number of days of concentrated occurrence within a 10-day period is 1 to 3; the number of days of duration of the process is mostly 2 to 4; the number of days of the longest duration is 5 to 9; the number of occurrences of the process is less than 1.5 times; the number of severe occurrences is less than 0.5 times; the probability of occurrence of a year of dry hot winds in 10 years is three to five times; the probability of occurrence of the severe type in 10 years is 1 to 1.5 times.

The II zone of the Hexi Corridor: This includes Zhangye, Wuwei and Minqin in the eastern part of the corridor. The annual number of days of occurrence is 3 to 5; the annual frequency is 5 to 10 percent; the number of days of concentrated occurrence in a 10-day period is 1 to 2; the number of days of duration of the process is 3 to 4; the number of days of longest duration is 5 to 10; the average annual number of occurrences of the process is 0.5 to 1.5 times; the number of severe occurrences is 0.1 to 0.3 times; the probability of occurrence of dry hot winds in 10 years is three to five times; the probability of occurrence of the severe annual type in 10 years is one to two times.

The II zone in Xinjiang: This includes Hami, Tarim Basin and Junggar Basin. The annual number of days of occurrence, the annual frequency, the number of days of duration in this zone are the same as those in the II zone in northern China, but the annual number of times of occurrence of the process is one to two times, and the number of times of severe occurrence is 0.3 to 0.7 times. The probabil- of occurrence of a year of dry hot winds in 10 years is four to six times. The probability of occurrence of the severe type in 10 years is two to four times.

(III) Slight zone: This includes the III zone in northern China, Hetao and Xinjiang.

The III zone in northern China: This includes northern Hebei, western Shanxi, the central and northern parts of southeastern Shanxi, the dry plateaus north of the Wei River, southern Shandong, the northwestern part of the Jiaodong Peninsula, northern Jiangsu, and northern Anhui. The annual number of days of occurrence is 1 to 3; the annual frequency is 5 to 9 percent; the number of days of concentrated occurrence is 1; the number of days of duration of the process is mostly 1 to 2; the annual number of times of occurrence is 0.5 to 1.0 times; the number of severe occurrences is 0.1 to 0.3 times; the probability of occurrence of a year of dry hot winds in 10 years is one to two times.

The III zone of Hetao: This includes the Ningxia and Hetao irrigated regions. The annual number of days of occurrence is 0.5 to 2; the annual frequency is 2 to 6 percent; the number of days of concentrated occurrence within a 10-day period is 0.4 to 1; the number of days of duration of the process is mostly about 2; the longest duration at Dengkou reaches 5 days; the annual number of occurrences of the process is 0.2 to 0.6 times; the probability of occurrence of dry hot winds in 10 years is one to three times.

The III zone in Xinjiang includes the western part of the Tarim Basin and the outskirts of the Junggar Basin. The annual number of days and the number of days of duration are the same as those of the III zone in northern China. The annual frequency in southern Xinjiang is 10 to 15 percent and less than 10 percent in northern Xinjiang. The annual number of occurrences of the process is 0.3 to 1.1 times; the probability of occurrence of dry hot winds in 10 years is 0 to 3 times.

(IV) The none zone: This includes the outskirts of the slight zones. In the northern China region and the Fen Wei valley, this zone is marked out by Qinling, the Huai River, the Great Wall and the northern part of the Wei River as the southern and northern borders. In the Hetao region, it is marked out by Yingshan and Helanshan. In the Hexi Corridor, it is marked out by Qilianshan and the desert. In Xinjiang, it is between the Altay Mountain and Tianshan, and Tianshan and the low hills of the Altay Mountain.

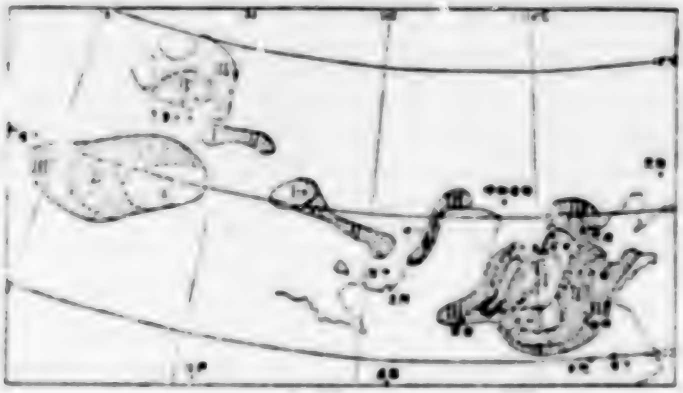

Figure 4. Map of Climatic Zones of Dry Hot Winds in the Northern Wheat Regions

V. Suggestions for Measures To Prevent Dry Hot Winds

1. Implementing reform of agricultural techniques and elevating the level of scientific planting are a fundamental measure of defense against dry hot winds. In the concentrated wheat producing regions affected by dry hot winds, water conservancy projects should be built, conditions for irrigation should be developed, soil must be improved, field management should be strengthened and various comprehensive agricultural techniques and measures should be implemented in the defense against damage by dry hot winds.

2. Building protective forests has a beneficial effect upon regulating microclimates in the fields and upon improving the ecological environment and defending against dry hot winds. According to experiments, the wind velocity of weather processes of dry hot winds in square fields protected by a forest network is less than that in open farmland by an average of 40.9 percent, the temperature at 1400 hours is lower by 2°C and the relative humidity increases 9 percent. In the concentrated wheat producing regions of the Guanzhong Plain and the Fen River Basin seriously affected by dry hot winds, building of protective forests should be uniformly planned to gradually realize the goal of protecting farmland by forest networks. Building of protective forests in Hetao, the Hexi Corridor and Xinjiang should be coordinated with that in the three northern regions so as to do the work of building a protective forest network in the farming and irrigated regions well.

3. Northern China, the Huang He and Huai River plains, and the Fen-Wei Valley are regions of concentrated winter wheat production. According to climatic analysis, 60 to 90 percent of the dry hot winds in these regions are concentrated between the end of the last 10 days of May to the first 10 days of June. Each locality can spray an ash solution, dihydropotassium phosphate and solutions of petroleum growth stimulants manually or by airplane, irrigate to prevent yellowing or use calcium chloride to soak the seeds before the occurrence of dry hot winds when forecasted by the local meteorological stations. These measures are effective measures of defense. Results of joint experiments of many localities show that the above measures have a definite effect in reducing the damage by dry hot winds and increasing the thousand grain weight and yield of wheat.

4. Selective breeding and popularization of high yielding superior varieties of wheat that resist dry hot winds are effective measures in the defense against dry hot winds. Wheat varieties have different climatic ecological types. According to surveys, generally, after introducing a variety from a region severely affected by dry hot winds to a slightly affected region, that variety's resistance to dry hot winds is better; conversely, it is worse. At the same time, attention should be paid to selectively breeding high yielding superior varieties which "avoid" the period of concentrated occurrence of dry hot winds of the locality.

9296
CSO: 4007/559

WAYS OF IMPROVING HYBRID RICE SEED PRODUCTION DESCRIBED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 5, 17 May 81 pp 2-3

[Article by Lou Xirang [1236 1585 4363], Chinese Academy of Agricultural Sciences: "Make a Success of Hybrid Rice Variety Breeding and Seed Production"]

[Text] Many localities have now made a start in establishing a set of relatively complete hybrid rice breeding [i.e., maintenance of breeders' stock] and seed production systems, have trained a technical contingent, and have designated the procedures for producing the "three varieties" in pure form as well as procedures, quality standards and a system of rewards and penalties for breeding and seed production, which have led to rather good results. Sichuan province has adopted the method of concentrating its technical contingent for seed production on successive plots [lian pian 6647 3651], and its output has gradually increased; in 1977 the average seed production yield was only 26 jin, while in 1979 it had risen to 98 jin, and in 1980, when seed production acreage had reached 210,000 mu, the yield also made a considerable jump, so that certain counties were averaging 200 jin per mu and certain brigades 300 jin per mu. In order to increase the quality of hybrid rice seeds, in 1980 Fujian Province allocated 250,000 yuan for maintaining the purity of the "three varieties" and set up 17 seed variety purification and revitalization stations throughout the province for the purpose of providing relatively good pure varieties of the "three varieties" to the various counties. But in some localities breeding and seed production is in bad shape, the various technical measures have been poorly implemented, or there is even low seed output and serious mixing and degeneration: the general mixing rate [hun za lyu 3236 7177 3764] is over 5 percent, in some cases it is about 20 percent, and in a few serious cases it exceeds 40 percent. Experimental results indicate that each drop of 1 percent in the purity of the F_1 generation decreases per mu yield by 8 to 12 jin, and when the mixing rate is 10 percent or more the increased yield advantages of hybrid rice are essentially lost. Accordingly, effective purification and revitalization work with hybrid rice is a critical matter. If we allow mixing to proceed unchecked, hybrid rice outputs and further progress will both be negatively affected.

How can effective purification and revitalization of hybrid rice be effected? Widespread experience indicates that we should concentrate on the following points:

1. Create a well-developed breeding and seed production system. Several years' experience shows that the system in which the breeding [i.e., maintenance of breeders' stock] is done at the county level (production of the pure "three strains"), seed production is done at the commune level (concentrated seed production on successive plots), and the seeds are cultivated at the brigade level is not only effective in isolation of varieties and prevention of mixing, but also helps to strengthen leadership and provide unified management and makes it possible to pass on techniques and train personnel so as to assure seed quality and quantity. Starting from its actual situation at the time, Guangxi Province set up three integrated hybrid rice seed production companies in Beiliu and Bobai Counties and Mabo Commune, Luchuan County; this was a good approach to concentrating hybrid rice seed production in base locations, specializing it and standardizing it. Using existing seed production stations and bases, the province implemented a unified program, operation on the basis of advance orders, level-by-level accounting, and individual unit responsibility for profits and losses. The county seed companies and other relevant bodies took on the work of technical leadership, commodity supply and seed procurement, management and sales, as well as seed allocation, supply of rations to the bases and the like. In the first year, units needing seed placed orders for specific quantities and drew up purchase agreements with the seed supply bases, and the "three guarantees" were implemented for the seeds (guaranteed purity according to standards, guaranteed germination rate according to standards, and guaranteed on-time provision of seeds), thus avoiding a disproportion between production and sales or blind production.

2. Further improvement of purification and revitalization of the "three strains." Other rice varieties (particularly sterile-free lines) have been mixed with hybrid rice varieties in the process of sowing, transplanting, harvesting, drying and storage, or because of ineffective isolation, natural crosses have been produced or spontaneous mutations have occurred, all of which can lead to mixing and degeneration. Accordingly, while developing hybrid rice, it is necessary to accord full importance to purifying and revitalizing the "three strains." Some provinces, municipalities and autonomous regions have proceeded on the basis of their own specific conditions and have set up programs and procedures for purifying and revitalizing seed strains; these must be strictly carried out and continuously generalized and improved through practice, by simplifying procedures and shortening cycles so that it will be easy to put them into more extensive use.

The work of purifying and revitalizing the "three strains" is highly technical, involves a large amount of work with a wide variety of procedures and stringent requirements, and must be undertaken by persons with a strong sense of responsibility, a good inquiring spirit and a meticulous approach to work. In addition, continuity must be maintained so as to provide the opportunity for learning and making improvements. The cognizant departments should furnish material and financial support and should resolve reasonably the problems of compensation, insurance and benefits for the people engaged in the work, as well as providing political and economic incentives so that they can concentrate on their work and devote themselves to purifying and revitalizing the "three strains."

3. Some seed production techniques:

a. Choose seed production seasons in terms of local conditions. For successful seed production, thought should be given to arranging for the flowering periods of the parent plants to coincide under suitable conditions, and every effort must be made to avoid excessively high or low temperatures, dry weather, heavy rains and the like. In this connection, many localities have already worked out such approaches as spring breeding and summer production, spring breeding and fall production, fall breeding and fall production, two-season per year of breeding and two-season per year of production and the like on the basis of their own natural conditions. Some mountain districts at relatively high altitudes have fluctuating air temperatures in the period preceding early rice seed production, and it is impossible to assure full heading in late season seed production; accordingly they have adopted the approach of propagating intermediate-season rice, which enables them to assure full earing and makes possible high yields, as well as allowing them to fit the production season in between the flowering seasons of other rice varieties, so that they can avoid mixing of strains and maintain purity, can allocate labor effectively and can achieve the goal of high output and good quality; in the case of parent varieties with relatively short reproductive periods, autumn seed production may be used if the economic results seem to favor it.

b. Effective and reliable isolation measures. Reliable isolation is the key to preventing mixing and maintaining purity. There are many methods of isolation, and experience shows that natural isolation gives very good results: no pollen should be disseminated in areas within 50 meters downwind or 100 meters upwind of the plants in question. Time isolation requires that the flowering periods of plants in breeding plots and seed production plots be staggered by about 28 days from the flowering periods of surrounding rice varieties. The physical isolation method involves maintaining a distance of at least 30 meters between seed production or breeding plots and other rice varieties. In the past, some seed production localities used plastic sheeting, hemp stalks or grass mats as physical barriers around breeding or production plots, but since they were not tall enough and the distance was not great enough, their effectiveness was very poor; this method should not be used. Varieties of restorer lines currently being used in production generally have good economic properties and accordingly they may be planted all around the seed production plots to act as a barrier. This method may also have the effect of expanding the sources of male parent pollen. The above isolation methods should be used in keeping with actual conditions; it is best to use several methods in combination.

In order to prevent mixing and maintain purity, it is also necessary to prevent mixing of varieties between the seedbed and the main field. Harvesting is the last stage of breeding and seed production, but it is also a process in which mechanical mixing can easily occur, and accordingly it is necessary to practice timely reaping, effective seed separation, cleanliness in harvesting and threshing, and prevention of mixing in drying and storage.

c. The problem of triply-staggered male parent seed production. In order to assure coincidence of flowering times and to assure high stable yields in seed production, Guanqian Commune, Youxi County, Fujian Province has implemented the triply-staggered male parent propagation method. In two years' of trials it has achieved rather good results, in particular, units which lack seed production experience or which are testing new combinations may wish to consider it.

8480
CSO: 4007/496

ANHUI

BRIEFS

WHEAT OUTPUT--Hefei, 23 Sep (XINHUA)--The 16 million peasants in Huaibei area in Anhui have reaped another bumper harvest of wheat on their 18.04 million mu of wheat acreage this year. With average per mu output exceeding 300 jin for the first time in the prefecture, the total wheat output this year is 1.75 billion jin more than in 1980 and 866 million jin more than in 1979, the previous peak year. Because of the high output, each peasant in the prefecture gets an acreage of 280 jin of wheat as food ration, or enough fine grain for 6 months, consumption, thus ending the 31-year situation of sweet potatoes being the main staple of peasants in the prefecture. [Beijing Xinhua Domestic Service in Chinese 0050 GMT 23 Sep 81 OW]

CSO: 4007/1

INCREASE IN TEA PRODUCTION, EXPORTS IN FUJIAN

Beijing GUANGMING RIBAO in Chinese 10 Aug 81 p 1

[Article by Lin Guitang [2651 2710 6974] and Chen Youren [7115 2589 0088]: "Implementing Scientific Planting of Tea; Popularizing Superior Varieties of Tea Leaves--Fujian Tea Production and Exports Increase Greatly"]

[Text] A broad number of tea plantations in Fujian Province have implemented scientific planting of tea and popularized superior varieties of tea leaves, and as a result the yield and exports of tea have increased relatively greatly. This year, over 250,000 dan of spring tea were harvested. Tea farmers have already sold to the state over 195,000 dan of tea to support the needs of domestic markets and exports.

Fujian Province is situated in the subtropical zone, the climate is mild, rainfall is abundant, the entire province has over 100 million mu of mountainous land, and there are many low mountains, gentle slopes, and hilly areas. Since the Third Plenum of the 11th Party Central Committee, the party committee at each level in Fujian Province has paid attention to developing the superiority of tea production, thoroughly implemented related policies and guidelines of the party, and grasped the development of tea production as an important undertaking. One important measure was to develop further the Tea Research Institute of the provincial Academy of Agricultural Sciences and its function as the basis for scientific research of tea. The institute has continued to do well the work of gathering information on the resources of tea varieties and the breeding of superior varieties, their research, and their popularization. Up to now, it has gathered and preserved 418 varieties of tea trees from abroad and from our nation. Thus it has come to acquire the largest number of tea varieties and relatively complete tea varieties and various qualities of tea in the entire nation. It has also continuously supplied superior quality tea tree seedlings to the various tea planations throughout the province. At the same time, it has introduced new experiences in the breeding of tea, control of insects, rebuilding of tea plantations, cultivation to produce bumper harvests, and mechanized tea production at the various tea plantations, so that research results have become productive forces in a timely way. To do a good job of the work of scientific planting of tea, the tea research institutes in the two key tea-producing regions of Chongan County and Anxi County have been revived or newly built. They have delved deeply into the research of the famous "da hong pao" tea of Wuyiyan and the "tie guan yin" of Anxi. A number of bases have been established for the cultivation of superior varieties of tea; among them, 11 are under the direct jurisdiction of the province. In recent years, they have provided over 500 million superior young tea plants to the tea plantations throughout the province. This has increased the area planted in superior varieties of tea--now constituting nearly one-half the total area of tea plantations.

9296
CSO: 4007/566

BRIEFS

MUSHROOM MEETING--A provincial conference on mushroom production was held by the provincial people's government in Fuzhou from 17 to 22 September. More than 140 people attended the meeting, including leading comrades of Fuzhou, Xiamen, Putian, Jinjiang, Longxi and Longyan and some major mushroom-producing counties. The meeting pointed out that Fujian accounts for 45 percent of China's total canned mushroom export, and that mushroom export accounts for one-eighth of the province's total export foreign exchange earnings. [Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 24 Sep 81 OW]

CSO: 4007/1

FOSHAN WORKS TO OVERCOME CROP LOSSES FROM RAINS

Guangzhou NANFANG RIBAO in Chinese 30 Jul 81 p 1

["Undiscouraged by Reduced Yields, Resist Disasters To Seize Bumper Harvests; People in Foshan Prefecture Enthusiastically Enter Into Late Crop Production"]

[Text] Each level of the party organization of Foshan Prefecture and the people's government have actively led the masses to do the work of late crop production well. They have insisted on resisting disasters to seize bumper harvests and are striving to make up for the loss of the early crop due to disasters. Up to the 27th of this month, the entire prefecture had prepared over 3 million mu of fields, constituting over 70 percent of the total area of late rice, and 100,000 mu of seedlings had been transplanted. At present, the entire region is grasping tightly the opportunity to transplant late rice.

From 29 June to 27 July 5 over 600 millimeters of torrential rain fell on Foshan Prefecture. The county with the highest amount of rainfall registered over 1,000 millimeters. Because of the continuous attacks by typhoons and torrential rains, the ripened early rice in more than 2 million mu throughout the region was soaked, causing a reduced yield, Over 200,000 mu of sugarcane were submerged, over 100,000 mu of fishponds were submerged, and some water-conservancy projects were damanged. Because of the abundance of rainwater and the high humidity, large numbers of pachydiplosis oryzae and tryporyza incertellus occurred in the late crop seedbeds, affecting late crop production relatively greatly.

Faced with this situation, the party organizations at each level in Foshan Prefecture and the people's government launched the masses to overcome natural disasters with the spirit of the Sixth Plenum as the driving force to produce the late crop well and to strive to make up the loss of the early crop due to disasters. The Foshan Prefectural Party Committee and the administrative office of the prefecture appropriated over 400,000 yuan, 2,000 tons of cement, 1,000 tons of diesel fuel, and 100 cubic meters of timber to support the disaster area and revive production. They also organized 23 work groups to go to each county and commune to grasp well the work of resisting disasters and rescue work together with the local cadres and masses, and to rapidly revive production. To realize a bumper harbest of the late crop, they emphasized grasping well the following key measures.

1. Cultivate seedlings well, and popularize hybrid paddy rice. Faced with the poor quality of the seedlings of the late crop and an abundance of diseases and

insect pests, they did a good job of applying fertilizers and controlling insects. At the same time, they grasped planting hybrid paddy rice well as an important measure to realize bumper harvests of the late crop. The whole prefecture plans to plant more than 400,000 mu of hybrid rice as the late crop.

2. Grasp the seasons well. Because of the effects of the weather, transplanting of the late crop was carried out 5 to 7 days later than last year throughout the entire prefecture. To make up for the lost time, each locality implemented the method of using plows, rakes, and tractors according to the "three quotas and one reward" (quota for time, quota for task, set quality, and reward for surplus). Various transplanting field meetings were held to popularize advanced experience and to hasten the progress of preparing the fields and transplanting.

3. Prepare sufficient fertilizers. The prefecture organized over 5,400 tons of superior-quality chemical fertilizers to support the disaster areas. Each county and commune also conscientiously grasped well the work of returning stalks to the fields, and the "three vines" were returned to the fields. Now the whole region has applied organic fertilizer to 3 million mu of the ricefields, constituting 70 percent of the total area.

9296
CSO: 4007/573

PROCUREMENT PRICES INCREASED FOR BEANS, OIL

Guangzhou NANFANG RIBAO in Chinese 1 Aug 81 p 1

[Article: "Our Province Decided to Increase Procurement Price for Beans; Prices of Soybeans and Oil Supplied to the Residents of Towns and Cities Unchanged"]

[Text To stimulate the development of the production of beans, the concerned leadership departments of the province have decided to increase the procurement prices for soybeans, oil and dark red beans, mung beans, phaseolus lunatus, pole beans, and such miscellaneous beans beginning 1 August. The procurement price for soybeans (including yellow soybean, black soybean, green soybean, brown soybean) is increased from the current unified price of 25 yuan per 100 shi jin to 37 yuan 5 jiao. The procurement price for oil and the procurement price for miscellaneous beans and the sales prices are also readjusted correspondingly. While readjusting the procurement prices for beans, the added price for surplus procurement of beans and oil has been abolished. But to take care of the benefits of the producers, the foodstuffs department will continue to implement the current practice of rewards for sale when procuring soybeans. Each farmer who submits 100 jin of soybeans for sale can use this to substitute for the procurement of 120 jin of rice, and another 40 jin of nitrogenous fertilizer (ammonium sulphate) will be awarded.

Even after the procurement prices for soybeans and oil are increased, the sale prices of soybeans and oil supplied by the state's foodstuffs departments to the workers and residents in cities and towns will not change. Circulating soybeans, exchanges of varieties, supplies of seeds, rewarded soybeans, beans for feed resold back to the farm villages, and soybeans and oil supplied to farm villages will be sold back to the villages at the same procurement and sales prices.

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RECORD OUTPUT OF SPRING-PLANTED PEANUTS, OTHER CROPS

Guangzhou NANFANG RIBAO in Chinese 9 Aug 81 p 1

[Article: "Our Province's Spring-Planted Peanuts Produce Bumper Harvests; Total Yield Registered an Increase of 6.9 Percent Over That of the Same Period Last Year, Which Was the Highest Level in History; This Year Our Province's Corchorus Capsularis and Hibiscus Cannabinus Realized Increased Yields"]

[Text] Our province's spring-planted peanuts for this year have been completely harbested. The total yield has reached 9.12 million dan, an increase of 6.9 percent over that of the same period last year, which was the highest level in history. The increases in the major producing regions of Zhanjiang, Huiyang, and Shantou were all over 10 percent.

Since the beginning of this year, our province's farm villages and regions suited measures to local circumstances, readjusted the distribution of agricultural production, and continued to popularize the effective planting system of "rotation planting of peanuts and paddy rice," The sowing area of spring-planted peanuts throughout the province increased by 300,000 mu over the same period last year. Each locality conscientiously popularized the superior varieties, sowed timely, applied sufficient base manure, strengthened management, overcame such unfavorable factors as drought during the early period of growth and an abundance of rain during the later period of growth, and thus realized a bumper harvest. The major production base of peanuts in our province, Jibai County, implemented the production responsibility system of "contracting work to the families," and the enthusiasm of the commune members to plant peanuts was high. The entire county planted 220,000 mu of spring peanuts, an increase of 40,000 mu over the same period last year. Total yield increased by more than 20 percent over the same period last year.

According to statistics of concerned departments, the total yield of corchorus capsularis and hibiscus cannabinus in our province this year registered an increase of more than 160,000 dan over last year--an increase of 8.6 percent.

This year, the provincial people's government implemented the measure of subsidizing 5 yuan of the price of each dan of corchorus capsularis and hibiscus cannabinus. The bast-fiber regions of each locality widely implemented the various forms of the production responsibility system and fully mobilized the enthusiasm of the broad number of farmers to plant bast fiber. This year, the area of superior varieties of corchorus capsularis and hibiscus cannabinus is larger, sowing was carried out better than in past years, management during the seedling period was more timely, and with the addition of the popularization of the various measures to increase production, increased yields were realized. Average yield per mu reached 493 jin, an increase of 13 jin per mu over that of the same period last year, which was the highest unit yield. Huazhou County is our province's major production region for corchorus capsularis and hibiscus cannabinus. This year, the entire county planted 100,000 mu of corchorus capsularis and hibiscus cannabinus, and the total yield increased 20 percent over last year.

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LATE RICE TRANSPLANTING BASICALLY COMPLETED BY 7 AUGUST

Guangzhou NANFANG RIBAO in Chinese 11 Aug 81 p 1

[Article: "Strive for Bumper Harvests of the Late Crop To Make Up for Loss of Early Crop; Transplanting of Late Rice Crop Has Basically Been Completed in Our Province:]

[Text] Encouraged by the spirit of the Sixth Plenum, our province's broad numbers of cadres and masses in the farm villages have conscientiously done the work of summer transplanting and summer planting well in order to strive toward the realization of a bumper harvest of the late crop. Up to "the beginning of autumn" (7 August), the entire province had transplanted a total of 24,874,000 mu of late rice, constituting 79 percent of the planned area; this is 1,744,000 mu more than in the same period last year. Sweet potatoes, peanuts, and soybeans have been planted in 3,745,000 mu, over 172,000 mu more than in the same period last year. Meixian Prefecture had completed the overall transplanting plan by 7 August and is now turning to field management.

The harvest of food grains of the early crop was poor in most areas this year because our province suffered continuously from such natural disasters as typhoons, rainstorms, disease, and insect pests. Therefore, each region paid attention to helping each commune and brigade implement planting plans for the production of the late crop, and more food grain crops were planted. Shantou Prefecture widely popularized the companion planting of sweet potatoes in peanut fields and the interplanting of soybeans in sweet potato fields, and increased the rate of land utilization. At the same time, the seasons were grasped tightly in order to seize transplanting and seize sowing, and the quality of plowing and harrowing the fields and of fertilizer was grasped well. Shantou Prefecture turned deeply and repeatedly plowed over 70 percent of the late rice fields. Zhanjiang Prefecture returned stalks to an area constituting about 80 percent of the total area of late-rice fields.

Faced with the situation of frequent disease and insect pests in the early crop and the large area of occurrence of diseases and insect pests in the seedbeds of the late crop, each locality grasped the work of preventing insects and eradicating diseases in seedbeds as an important measure for seizing bumper harvests of the late crop of food grains. Foshan, Guangzhou, and Zhaoqing widely popularized the application of "accompanying insecticides" before transplanting and soaking seedling heads to destroy disease and insect pests in the seedbeds, and then exerted every effort to transplant healthy seedlings. Shantou Prefecture disinfected the soil of over 800,000 mu of land left by the early crop affected by rice blast. The pathogenic bacteria remaining in the soil were destroyed. Each locality also implemented various methods to increase the level of scientific planting by the farmers in the new situation created after implementation of the joint production responsibility system. Huiyang Prefecture widely implemented the practice of "Contacting families" and used joint production families and the demonstrative functions of these farm families to lead the broad ranks of farm families to do a good job of scientific planting.

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BUMPER RICE HARVEST IN CHAOAN COUNTY DESPITE DISEASE

Guangzhou NANFANG RIBAO in Chinese 14 Aug 81 p 1

[Article: "Chaoan County Popularizes Knowledge of Agricultural Science Among Families in This Year of Big Outbreak of Rice Blast; Its Spread Was Controlled, and the Early Crop Produced a Big Bumper Harvest"]

[Text] The early crop in Chaoan County produced a large bumpter harvest in this year of a big outbreak of rice blast. Although the area planted in early rice was less than that of the same period last year by over 14,100 mu, because of the readjustment of the distribution of production throughout the county, the unit yield reached 810 jin--an increase of 68 jin over the same period last year. The total yield still reached over 239 million jin, an increase of 4.2 percent. The unit yield and the total yield surpassed the highest levels in history.

This year has seen the second largest outbreak of rice blast since liberation. The reasons for the big outbreak were as follows. One, the major varieties of early rice, "gui chao" and "qing er," have been popularized for many years, and they are easily affected by the disease. Two, there is a historical area of the disease. Three, nitrogenous fertilizers were overly applied and the seedlings were tender. Four, drought occurred during the early growth period, during the middle growth period the weather was continuously damp and cold, while during the latter growth period there were rain and floods, causing the rice blast to spread easily. Also, 60 percent of the production teams throughout the country implemented contracting production to the worker and contracting work to the family. Most of the commune members of these production teams were unfamiliar with planting techniques and did not know how to control such a serious disease. Faced with this situation, the Chaoan County Party Committee and the county people's government paid a great deal of attention to developing the function of agricultural departments and agricultural technical personnel, relying on them to analyze the production trend of early rice; they daringly used measures of scientific cultivation that suit the actual situation in Chaoan; and they passed on the knowledge of agricultural science to the families. The meetings of the secretaries of the communes called by the county communes and the meetings of the party branch secretaries of the brigades planned production and allowed agricultural technical personnel to explain techniques. The county commune radio station also invited agricultural technical personnel to lecture over the radio. Some brigades and production teams that have implemented contracting production to the families took the initiative to hold meetings of heads of household the commune technical station was invited to dispatch personnel to lecture on techniques, and other commune members came to listen. Some commune technical stations also contacted farm families and conducted demonstrations of agricultural techniques, which they could then pass on to other farm families. In addition, the county committee held two training classes in techniques for brigade leaders, and training courses were given to all 530 brigade leaders. The key was to learn about the scientific use of fertilizers and the prevention of diseases and insect pests. They have served greatly in seizing bumper harvests of early rice.

Because of the implementation of these measures, the area of occurrence of rice blast during this year's early crop was controlled within an area of some 50,000 mu, and the loss was no worse than last year's. During last year's early crop, the entire county had only 11 brigades producing 1,000 jin per mu. This year, the number of brigades producing 1,000 jin per mu dramatically increased to 65.

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EARLY RICE INCREASE IN ZHANJIANG PREFECTURE

Guangzhou NANFANG RIBAO in Chinese 18 Aug 81 p 1

[Article by Lan Yuankuan [5663 3633 1401] and Zhang Qingjin [1728 3237 6975]: "Grasping Key Measures on the Basis of the Rise in the Enthusiasm of the Masses; Zhanjiang Prefecture Produces Increased Yields of Early Rice Because of the Planting of Hybrid Rice"]

[Text] This year's early crop in Zhanjiang Prefecture realized bumper harvests although there were frequent natural disasters. One important reason was the popularization of hybrid paddy rice. What is the situation with regard to planting hybrid rice (also called superior hybrids) in this prefecture, and what is the trend for future development? Recently, we visited the responsible comrades of the agricultural departments of the prefecture and asked them to introduce us to the situation.

The responsible comrades of the agricultural departments of the prefecture said: The situation with regard to popularizing hybrid paddy rice during the early crop is good. The total area of the early crop of paddy rice in the entire prefecture cofers over 830,000 mu; hybrid paddy rice covers over 700,000 mu. The 13 counties and cities (suburbs) of the entire prefecture have all popularized hybrid paddy rice. The results of the harvests show that the ordinary areas of hybrid paddy rice produced a unit yield of over 100 jin more than ordinary varieties of paddy rice, with highs reaching 300 to 400 jin. We can say that hybrid paddy rice has served greatly to increase the yield of this year's early crop by over 100 million jin. Over 290,000 mu of hybrid paddy rice were planted as the early crop this year in Gaozhou County; this is 60 percent of the total area. Although this county encountered drought during the early growth period, low temperatures during the middle growth period, and overly abundant rain during the latter growth period and such unfavorable weather, and although the area of early rice was 10,000 mu less than in the previous year, the summer harvests of hybrid paddy rice still registered an increased yield of 20 million jin over the same period of the previous year. Last year, the early crop of hybrid paddy rice in Yangchun County was less than 1,000 mu. This year, the early crop was planted on more than 67,000 mu. The area of popularization increased several dozen times. They readjusted the distribution of production and reduced the area of paddy rice by 17,000 mu for this crop, but the total yield of rice grains still registered an increase of more than 31 million jin over last year. In general, practical results show that popularization of hybrid paddy rice has given the agricultural production of Zhanjiang Prefecture many benefits. The more outstanding benefits are as follows: It has greatly increased the unit area yield; it has promoted the readjustment of crop distribution; part of the land can be freed for planting economic crops; it has hastened the rate of change in low-yielding regions; and it has advanced the popularization of agricultural science and technology. Many comrades said: Planting hybrid paddy rice has led the whole situation forward.

When talking about the future trend of development of hybrid paddy rice, the responsible persons of the agricultural departments said: Because of the success of planting superior hybrids in the early crop, the strength of growth of the late crop at each locality has become greater. In the regions that have experience in planting hybrid paddy rice, such as Gaozhou, Huazhou, and Xinyi counties, the areas of hybrid paddy rice plantings in the late crop this year have all expanded. Last year, Yangjiang County's late crop covered only somewhat over 120 mu, while this year's late crop covered about 70,000 mu. Haikang County had only several dozen mu of late crop last year; this year's late crop covered 100,000 mu.

Of course, the popularization of a new variety is not always smooth. No matter what, the local party committees and the county party committees in each county saw this and decided to grasp it. According to the demands of the prefectural party committee, the area of hybrid paddy rice will undergo an even greater development next year and the year after. It will be carried out for 3 or more years so that the increased yield of food grains can be greater. In this way, more land can be freed to plant economic crops so that the broad numbers of farmers can have food grains and money and become rich quicker. Now we are thinking of ways to concretely solve some problems and thus to strive toward bumper harvests of the late crop of hybrid paddy rice. The main problems are: first, strengthening technical guidance; second, providing material assurances, especially supplying nitrogenous fertilizers and potassium fertilizers on time; and third, grasping seed propagation more tightly in order to prepare for large-scale popularization of hybrid paddy rice next year.

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BRIEFS

DROUGHT IN GUANGXI--Guilin Prefecture has actively fought against drought to protect seedlings. Since the beginning of autumn, temperatures have been high in Guilin Prefecture and there has been very little rainfall, thus adversely affecting the growth of late rice and dryland crops. As soon as the drought situation became apparent, the leadership at all levels in Guilin Prefecture immediately mobilized the cadres and masses and adopted active measures to fight drought. Up until now, the prefecture has irrigated over 95,000 mu of mid-season and late rice seedlings. [HK161242 Nanning Guangxi Regional Service in Mandarin 1100 GMT 9 Sep 81 HK]

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AFFORESTATION PROCEEDING WELL DURING RAINY SEASON

Shijiazhuang HEBEI RIBAO in Chinese 6 Aug 81 p 1

[Article by Peng Chuntai [1756 2504 0669]: "Implement Production Responsibility System in Forestry--Afforestation Throughout the Province During the Rainy Season Has Reached Over 450,000 Mu"]

[Text] Up to the end of July, this year's statistics show that over 455,700 mu have already been afforested throughout the province during the rainy season. During the summer, over 23,200 mu of forest seedlings have been cultivated, and afforestation and preparation of land covered over 131,000 mu.

This spring, because of severe drought, each locality in the whole province completed less in afforestation and cultivation of seedings. But "that which was lost in spring was made up for in the rainy season." Starting prior to the arrival of the rainy season, each locality actively began to prepare the seedlings, transported seedlings, and prepared funds. Quyang County was a backward county in the past. This year, this county decided to make preparations early and start work early to do well the work of afforestation during the rainy season. Now, the whole county's afforestation task of 5,000 mu during the rainy season has been completed; the total area afforested amounts to over 7,000 mu, and over 120,000 jujubi trees have been planted. Some localities and counties also allocated capital to help communes and brigades in financial difficulties with their afforestation and cultivation of seedlings. Xingtai Prefecture provided over 50,000 yuan in capital to help communes and brigades purchase Chinese pine seeds.

In afforestation during the rainy season, each locality paid attention to establishing authority over the forests and implementing the production responsibility system in forestry. Shijiazhuang Prefecture held a meeting to exchange experiences in the determination and the issuance of proof of authority over forests before afforestation during the rainy season began, as a means to correct the prefecture's deeper leftist influence. Emphasis was placed on delegating private mountains and responsibility for mountains. The Yixian County Party Committee further liberated ideology through learning the spirit of the Sixth Plenum; whereas the original regulation had limited the number of private mountains to only 10 percent of the waste mountains suitable for afforestation, this limit was increased to 20 percent. Where conditions permit, more can be zoned. Now, 60 percent of this county's private plots have been afforested.

To assure quality and quantity in completing the summer's forest seedling cultivation task, many localities and counties practiced the method of walking on two legs in management by the state and the people, and seedling cultivation contracts were signed at each level.

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HUBEI

BRIEFS

COTTON PROCUREMENT--Hubei Province has reaped a good cotton crop from 8 million mu of cotton fields this year. As of 15 September 687,659 dan of new cotton had been procured in the province, an increase of 75 percent over the same period in 1979 which was also a good year. [OW231453 Beijing Domestic Service in Mandarin 1200 GMT 20 Sep 81 OW]

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BRIEFS

COTTON PROCUREMENT--By 20 September Xuzhou Prefecture of Jiangsu Province had procured some 91,000 dan of new cotton, 7.5 times as much as in the same period of last year. This year the prefecture grew 700,000 mu of cotton, which ripened earlier than usual. [OW261445 Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 25 Sep 81 OW]

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STATE PLAN FORMULATED TO CONTROL SOIL EROSION IN JIANGXI

Beijing GUANGMING RIBAO in Chinese 15 Aug 81 p 1

[Article: "State Agricultural Commission Organizes Scientific and Technical Personnel To Carry Out Typical Surveys; Plans Drawn Up for Overall Control of Water and Soil Loss in Xingguo County"]

[Text] GUANGMING RIBAO reporter Zhang Xiuping [1728 4423 1627] reports: Our nation's first county-level comprehensive water and soil retention zone has been established in Xingguo County, [Ganzhou Prefecture], Jianzxi Province. At present, a group of scientific and technical personnel are drawing up an overall plan to control water and soil loss in Xingguo County on the basis of the zoning report. A mass movement to struggle against nature that will gradually change the face of the homeland has thus begun.

Xingguo County was the revolutionary base of the central soviet region during the second revolutionary war period. The people here have made outstanding contributions to the Chinese revolution, under the leadership of the older generation of proletarian revolutionaries like Comrade Mao Zedong. But because of the destruction of the forests by long periods of war, and with the addition of the influence of leftist ideology after liberation, trees were felled without control and forests were destroyed for reclamation. Xingguo County became one of the regions of our nation's south that is suffering most seriously from the loss of water and soil. According to statistics, the loss of water and soil covers an area reaching 2.84 million mu, constituting 84.7 percent of the area of mountain land. Each year, 11 million tons of soil are lost. The ecological environment has gradually worsened, damage by drought and floods has become more severe, agricultural production has been seriously affected, and the people's life is poor; annual percapita income is only about 50 yuan.

Close to 100 scientific and technical personnel representing a total of 50 units of the Changjiang Valley Planning Office, the Nanjing Pedology Institute of the Chinese Academy of Sciences, the Huazhong Agricultural Academy, and water and soil preservation units, agricultural, forestry, and livestock production units, and water conservancy and meteorological units of the provinces, localities, and counties were organized and led by the State Agricultural Commission to Xingguo last July. They were divided into eight special groups specializing in soil erosion, geomorphology, etc, and they began the work of comprehensive zoning for water and soil preservation. They saw and heard the hard life of the people there, and this further stimulated their sense of responsibility to do well the work of zoning. The scientific and technical personnel climbed mountains, crossed rivers, and went to all the villages and towns in Xingguo County to obtain firsthand information. The zoning report which they presented was reviewed by the relevant departments and specialists, and the first draft was completed in April of this year.

Through this zoning work, the agricultural resources of the soil, water conservancy, weather, and life forms in Xingguo and the productive situation were clearly understood; the causes, present situation, patterns, and damage by the loss of water and soil throughout the country were understood clearly; and experiences and lessons were summarized. The scientific and technical personnel also divided the entire county into nine zones, based on the types of erosion of soil, leaching, and the present situation of agricultural production. The direction of development of agricultural production in the future for each zone and the measures to control the loss of water and soil were pointed out, thus providing a scientific basis for the drawing up of a plan to comprehensively control the loss of water and soil throughout the county and to hasten the development of agricultural production.

While carrying out comprehensive zoning for water and soil preservation, the scientific and technical personnel of the Changjiang Valley Planning Office cooperated with the local scientific and technical personnel. They selected the small Tangbei Valley in Longkou commune, which is suffering severely from loss of water and soil, as the test locality for control efforts, and they combined engineering and biological measures and the simultaneous management of trees, shrubs, and grasses. The masses were mobilized to control over 2,300 mu of mountain land, and they planted 700,000 masson pine trees, nearly 60,000 economic forest trees, and some shrubs. This spring, scientific and technical personnel of Xingguo County went to Yongfeng and Longkou communes, where loss of water and soil is serious, to sow and afforest an area of 150,000 mu by plane.

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BRIEFS

FRUIT HARVEST--Qinghai Province expects a bumper fruit harvest this year. It is estimated that total fruit output will reach 30 million jin. The province has 2 million fruit trees. Provincial storage of fruits will reach 4 million jin, an increase of 1 million jin over 1980. [SK270707 Xining Qinghai Provincial Service in Mandarin 2330 GMT 26 Sep 81 XK]

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SHAANXI

WATER WITH HIGH SAND CONTENT USED FOR IRRIGATION

Xian SHAANXI RIBAO in Chinese 6 Aug 81 p 1

[Article by Xu Yian [1776 5030 1344] and Cheng Yonghua [4453 3057 5478]: "Utilizing Scientific Technology To Change the Harmful to the Beneficial; Luohuiqu Experiments With Drawing Water With High Sand Content for Irrigation"]

[Text] The Luohuiqu Administrative Bureau, which drew praise at the national scientific conference for creating large irrigated areas by drawing water with a high content of sand for irrigation, has been doing things consistently for over a decade and has insisted on combining scientific research with production to continuously develop ways to draw floodwater for irrigation, achieving rich results.

Luohuiqu is a large irrigated area covering 770,000 mu. The various levels of canals are designed according to theoretical plans for the transport of clear water. Since the 1950's when it began irrigating the land, it had always followed the rule of "closing the floodgates and stopping the water whenever the sand content surpassed 15 percent (i.e., when each cubic meter of turbid water contains 166 kilograms of sand)," so as to prevent the canals from being blocked by silt. Frequently, during summer drought when water is in short supply, there are 10 to 20 days or even a month's period when no water could be supplied, seriously affecting irrigation and drought resistance, and the conflict between the supply and demand of water was enormous. Changing this passive situation thus became the urgent demand of production in the irrigated region. Because of this, since the 1960's, they have carried out experimental research in drawing water with a high content of sand for irrigation, starting out from a point to an area and from neighboring localities to faraway places according to plan. They combined the actual situations in production and explored the pattern of transporting turbid water with high concentrations [of sand], and gradually they expanded the region for diversion of floodwater. Now, turbid water with a high content of sand can be transported over long distances smoothly without being limited by the sand content of the incoming water. The highest content of sand in the water drawn is 60 percent (i.e., each cubic meter of turbid water contains 965 kilograms of sand), successfully changing the harmful to the beneficial, expanding the source of water, and changing the sand in the floodwater into a resource for use in irrigation and for improving saline and alkaline land. In recent years, an additional 19 million cubic meters of water have been drawn each year on the average, constituting 20 percent of the total amount of water drawn for summer irrigation; 10 million tons of sand have been carried, constituting about 12 percent of the amount of sand transported each year by the Luohe. The water irrigates

100,000 mu-times of agricultural crops and releases silt to improve about 10,000 mu-times of saline and alkaline land. It has served a visible function in relieving "choking" drought and in improving low-yielding fields damaged by salinity and alkalinity. It has also reduced the burden of mud and sand in the Huanghe. According to surveys, drawing water with a high content of sand for irrigation has increased the yield of corn by from 13 percent to 28 percent and increased the yield of cotton by from 9 percent to 23 percent. The resulting gain from the improvement of saline and alkaline land has been outstanding. For the past 11 years, the Luohui irrigated area has drawn a total of 157 million cubic meters of floodwater, used over 97 million tons of sand, irrigated 830,000 mu-times of farmland, and released silt to improve over 90,000 mu-times of low-yielding fields.

At present, the experience of the Luohui region in drawing water with a high content of sand has been popularized and used in other large irrigated regions in the Guanzhong region and in some medium and small irrigated regions in northern Shaanxi, and they have all realized good results.

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SICHUAN

IMPORTANCE OF AFFORESTATION SEEN IN SICHUAN FLOODING

Beijing GUANGMING RIBAO in Chinese 21 Aug 81 p 1

[Article by Xinhuashe Reporters Xian Guangyou [1720 1684 0645] and Fan Shi [5466 8902]: "Be Alert; Do Not Allow Changjiang To Become a "Second Huanghe!" Forestry Experts Have Proposed a 10-Point Suggestion To Revive and Develop Forestry After the Flooding in Sichuan"]

[Text] We reporters visited the disaster areas in Sichuan and saw the massive amounts of silt left by the floodwaters after the flood had receded. The silt was generally about 1 chi thick, while in some places it was about 2 chi thick. Responsible comrades of the Chongqing Municipal Party Committee told us that when the peak of the flood reached Chongqing, the flow in the Changjiang reached a high of over 80,000 cubic meters per second, and the sand content was 0.7 percent. When the flood reached Wushan (the exit point of the Changjiang from Sichuan), [the flow] was over 70,000 cubic meters per second. This shows that during the peak flooding period, over 500 cubic meters of mud and sand per second flowed from Sichuan, "the land of abundance," and the three gorges into the middle and lower reaches of the Changjiang and the East Sea. Calculated at over 500 cubic meters per second, this amounts to over 1.8 million cubic meters every hour. This figure is frightening!

Why does such a serious flood disaster occur on the several rivers in Sichuan? At the briefing session on flood resistance, rescue operations, and saving production held by the Sichuan Provincial Party Committee, everyone believed that one important reason is that the forests of the upper reaches have been seriously damaged, the mountain regions have been reclaimed without any regard, the ecological balance has been severely damanged, and thus the water and soil cannot be retained. Right after liberation, Sichuan Province was a province with relatively more forests; the percentage of coverage reached 19 percent. Now, forest coverage throughout the entire province has dropped to 13.3 percent. If felling continues at the present rate, the resources will be depleted after 10 years. Loss of water and soil over large areas has made the formerly clear water of the Changjiang turbid, and the mud and sand content of the Changjiang has increased.

Tan Qilong [6223 0796 7893], first secretary of the Sichuan Provincial Committee of the Chinese Communist Party, investigated the disaster situation and said painfully: In the past, some people have said that the Changjiang was about to become a second Huanghe, but their observation has not attracted sufficient attention.

Today, as I look at the water of the Changjiang and the water of the Huanghe, what is the difference? This is a painful lesson, and it must attract sufficient attention! He said that forestation and the greening of bare mountains have become important tasks that cannot be posponed. We must be determined to solve the problem. Otherwise, we will commit a grave mistake and will bring disaster upon later generations, and the damage will be endless. We cannot "take from our ancestors and create disasters for our offspring!"

To rapidly revive and develop our nation's forestry production, forestry experts and concerned people have proposed the following suggestions:

(1) As for management guidelines, we must rapidly change the past management guideline of using the forest regions on high mountains for production of lumber to one of utilizing water sources to nourish forests as the primary goal and of utilizing forests to produce lumber as secondary--thus fully developing the multiple gains of forests.

(2) As for the method of felling, we must stop the past irrational method of felling large areas and intensive and selective felling. We must practice the rational felling method of taking selective felling as the key and small-area comprehensive felling as secondary.

(3) Areas of forests nourished by water sources where the slope is steep and where revival is difficult after felling should be zoned as areas prohibited from felling.

(4) The backward technique of gathering logs by rolling them down slopes should be abolished, and great efforts should be exerted to develop and popularize the new technique of transporting logs by suspended cables.

(5) Planning must be overall, distribution must be rational, and the amount of felling should be adjusted according to the structure of the forest resources and the growth pattern, so that "green mountains will always remain and can always be utilized."

(6) Comprehensive utilization should be greatly developed, resources must be conserved, and problems of sources of energy and firewood for commune members in farm villages must be actively solved.

(7) The "forest law" (trial) must be strictly executed, and protection of forests and protection against fire must be carried out well.

(8) State-operated and collective forest farms mainly engaged in forestation should be established, and special teams should be organized to develop forestation on waste mountains, to renew land left after felling, and to increase backup forest resources.

(9) Reclamation of high mountains must be strictly prohibited, Regulations must be established to prohibit reclamation above a certain slope. Areas that have already been reclaimed should be gradually returned to the forest, and farming there should be phased out.

(10) The problem of forest rights and of a system of management must be solved early. Forestry management agencies and technical forestry teams must be established and made sound. The various forestry policies must be conscientiously implemented and executed.

Editorial Comment: As to being alert to the problem regarding the worsening of the ecology of the upper reaches of the Changjiang, which may have serious results, this is not a new problem. In August 1979, this paper gave space to a special column for discussion of the question, "Is the Changjiang in Danger of Becoming a 'Second Huanghe?'" This is a problem that has been noted by many scientific and technical workers. This year, the cold fact that the floodwaters in Sichuan poured into the Changjiang has once again brought this question to light.

We suggest that all persons who are concerned about construction of the motherland conscientiously read this report to see how much havoc can be wrought by the destruction of forests and vegetation. Actions that violate the laws of nature will naturally be punished by nature. We must remember this painful lesson. For our offspring, we must set out goals to take scientific measures to prevent the Changjiang from becoming a second Huanghe!

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PROGRESS OF AGRICULTURAL RECLAMATION PRODUCTION

Kunming YUNNAN RIBAO in Chinese 28 Jul 81 p 1

[Article by Wei Xiangjie [7614 4382 2638]: "Increased Progress in Development of Diversification of Our Province's Agricultural Reclamation System"]

[Text] During the past 2 years, our province's agricultural reclamation system has emphasized the development of the superiority of natural resources and has gradually changed the internal structure of agriculture; the road toward diversification has become wider and wider; the development of production of commodities has quickened; and the agricultural farm economy has been enlivened.

The various state farms belonging to the province's agricultural reclamation system are located mostly in the tropical zone of the border regions and the subtropical regions, which are beneficial to the development of economic crops. As early as the beginning of the 1950's during the period the farms were being established, each farm paid attention to suiting measures to local circumstances, and such economic crops as rubber, tea, coffee, pepper, and sugarcane were developed. Later, because of the influence of leftist ideology, farms having crops with long growth periods unilaterally emphasized the development of rubber. Thus, only rubber was planted but other economic crops were not planted. Farms having crops with short growth periods one-sidedly grasped food-grain crops. Therefore, many farms for a long period remained in the mudpond of cultivating only a single crop and carried the burden of deficits. After the Third Plenum of the 11th Party Central Committee, each farm conscientiously launched a discussion of the criterion of truth, cleared away the influence of leftist ideology, readjusted management guidelines, started out from the actual situation of each farm, and, on the basis of determining the main crops for each farm, broad roads were opened for production, diversification was implemented, there was overall, development and commercial production bases were rapidly established. The Xishuangbanna reclamation area planted mainly rubber, but at the same time it developed tea, sugarcane, food grains, and tropical fruits. The Ximao and Lincang reclamation regions planted mainly tea but placed equal emphasis on rubber and food-grain crops. The Honghe reclamation region produced rubber well, while at the same time it utilized the convenience of railroad and highway transportation to exert efforts to develop tropical fruits and to plant cinnamon and other such southern medicinal plants. Lujiang and Xincheng farms in Baoshan County managed and sapped the rubber trees on their rubber plantations well, and they also selectively developed coffee and pepper production.

Because management guidlines were determined by starting out from the actual situation, the superiority of nature was developed, and with the establishment of various forms of the production responsibility system, the yield of food grains throughout the entire system last year showed an increase of 7.9 percent over 1979; other kinds of economic crops also showed relatively great development. The setting out of plants on young plantations mainly engaged in rubber surpassed plans by 22 percent, four times that of 1979. The yield of dry rubber increased 16 percent over 1979. The areas planted in tea, coffee, pepper, and tropical fruits all surpassed the planned indicators and tasks. Total yields compared to those of 1979 showed that tea increased 140 percent, coffee increased 26 percent, pepper increased 16 percent, and tropical fruits increased 240 percent. The development of diversification enlivened the agricultural farm economy, and with the addition of the results of other policies, the whole system realized a profit of over 41 million yuan last year.

This year, the enthusiasm on the part of each farm in the provincial agricultural reclamation system to develop diversification is even higher. With a 40-percent reduction in the total amount of investment in capital construction by the state from last year, ways are being found, private funds are being utilized, funds from profits kept by the farms are being utilized, and capital from bank loans is being utilized for the reclamation and cultivation of seedlings. It is estimated that over 70,000 mu of rubber plants can be set, and the development of tea, coffee, pepper and tropical fruits will be faster. The area of newly set plants of tea and tropical fruits this year is equivalent to the cumulative total of the areas in past years. Coffee has increased fourfold, while pepper has increased 40 percent. The pressing season for sugarcane has ended, and the yield of sugar has shown a net increase of over 4,000 tons over the previous year--an increase of 51 percent.

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CSO: 4007/562

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CSO: 4007/553

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ORG: All of the Jiangsu Agricultural College

TITLE: "Studies on the Etiology and Specific Control of Gosling Plague"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 1-8

TEXT OF ENGLISH ABSTRACT: An outbreak of enzootic disease occurred in flocks of 5-20 day old goslings in the city of Yangzhou, Jiangsu Province, in 1956, and a virus was successfully isolated from the tissues of the infected goslings. In 1961 a similar virus was isolated which could reproduce a disease identical to that observed in natural outbreaks. The names Gosling Plague (GP) and Gosling Plague Virus (GPV) were thus given to this specific disease and its causative agent.

In 1962 anti-gosling plague serum was prepared. After serial passages in developing goose embryos, the virus was gradually attenuated and a vaccine was obtained from it for prophylaxis of GP. During 1962-1979, about 4 million female geese were vaccinated with this live attenuated vaccine. Goslings from vaccinated mothers or those receiving antiserum prepared with the Jiangsu strains of GPV

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 1-8]

could successfully withstand challenge from strains of GPV isolated from different parts of China. The Chinese GPV was found to be antigenically similar to the GPV isolated in Vietnam and Hungary.

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TITLE: "Ecological and Genetic Investigation of the Large Grain Germplasm of Spring Wheat"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 22-27

TEXT OF ENGLISH ABSTRACT: This paper discusses the results of experiments in Beijing, Changbei (Hebei Province), Yinchuan (Ningxia), Kashan (Heilongjiang Province), Xining (Qinghai Province) and Lhasa (Tibet), in 1978 and 1979, on 54 varieties of spring wheat originating from 6 provinces/cities of China and 25 countries of the world.

The results of experiments indicate that:
1. There exists a positive correlation between the 1000 grain weight of wheat and the altitude of the experimental plot. Most varieties showed that the higher the altitude of the experimental plot, the heavier the 1000 grain weight.

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 22-27]

2. According to the variation of the 1000 grain weight of experimental varieties in different ecological regions, the large grain germplasm of spring wheat has been preliminarily sorted as follows:
(1) Adaptive ecological type;
(2) Stable ecological type;
(3) Ecological type of plateau.
3. By analyzing the lineage of large grain germplasm of spring wheat, we may obtain large grain variety of wheat from hybrid combinations between *Tr. aestivum* x *Tr. aestivum*, *Tr. aestivum* x *Tr. durum*, *Tr. aestivum* x *Agropyron glaueum*.

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YANG Kecheng [2799 0344 6134]
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TITLE: "Studies on the Inheritance of Quantitative Characteristics for Plant Type in Some Inbred Lines of Maize"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 28-36

TEXT OF ENGLISH ABSTRACT: The present study shows that the general combining ability of quantitative characteristics for plant type can be divided into positive and negative values, and the direction of the values will not change with years or with the mating groups.

The results of this experiment also reveal that additive gene effects make a greater contribution than do non-additive ones to the inheritance of plant type traits in maize. There is a big difference in the magnitude of heritability estimates among these characteristics. Generally, estimates of the heritability in a broad sense were found to be high in most cases, whereas those estimates of

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 28-36]

the heritability in a narrow sense usually varied among different traits. It is suggested by the authors that in developing an ideal type of maize plant, the parental inbred lines must be selected for their desirable attributes, giving priority to the combination of mating parents.

AUTHOR: LUO Peng [5012 7720]

ORG: Sichuan University

TITLE: "The Parthenogenesis of Rape and Its Use in Production"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 37-40

TEXT OF ENGLISH ABSTRACT: Artificial parthenogenesis of Brassica napus L. was induced by interspecific pollination with the pollen of B. campestris L. In this way, parthenogenetic haploids of rape were produced. The induced parthenogenetic haploids of rape were similar to their mother plants in shape, but rather smaller. The chromosome number of the body cells of the rape haploids was 2n = 19. By careful cultivation, treatment with 0.2 percent colchicine solution and selfing, some inbred seeds were obtained from which homozygous inbred lines such as 3529 were produced. The plants of the homozygous inbred lines of rape were similar to their mother plants in shape, normal in size and fertile. They were very uniform in their morphological characteristics. Crosses were made among the homozygous lines and the hybrid combination "3529 x Oro" was bred. The hybrid rape of parthenogenetic origin "3529 x Oro" is high yielding, good in oil quality and resistant to some stress conditions. It is now being cultivated in over 10,000 mu in western Sichuan Province.

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ORG: LI of the Crop Germplasm Resources Institute, Chinese Academy of Agricultural Sciences, Beijing; Vergara and Visperas both of the International Rice Research Institute, Philippines

TITLE: "Adaptability of Rice Cultivars to Different Temperature Patterns"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 45-50

TEXT OF ENGLISH ABSTRACT: The rice varieties from different countries have been tested at various growth stages for cold tolerance at the International Rice Research Institute. The results of the studies are as follows:

The cold tolerance reactivity of varieties at different growth stages tends to be very similar to the temperature pattern of areas where the varieties were originally grown. Six types of temperature patterns with the corresponding plant reactions to low temperatures at different growth stages are proposed. A highly significant negative correlation between the cold tolerance scoring at seedling stage and the latitude of the place of origin of the variety was found. No correlations were discovered among other growth stages and the latitudes of the place of origin of

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 45-50]

the varieties concerned. In order to facilitate the breeding for cold tolerance, it is recommended to exchange the breeding materials as much as possible between localities with similar temperature patterns.

AUTHOR: SHAO Jinwang [6730 6855 2489]
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ORG: Both of the Laboratory of Plant Physiology, Department of Agriculture, Nei Monggol College of Agriculture and Animal Husbandry

TITLE: "Investigations of the Differences of Physiological Properties in Various Specific Types of Sugar Beets"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 51-60

TEXT OF ENGLISH ABSTRACT: A systematic study of the physiological properties of different specific types of sugar beets according to their physiological metabolism was carried out in our laboratory. We found that the yields and sugar content of various specific types were correlated to the differences of their physiological properties. During the developmental stage the metabolic activities of nitrogen, amino acids and phosphorus were much more vigorous in the high-yielding species (types) than in the high sugar content species (types), and therefore, more nitrogen and phosphorus were required. The increases of tuberous roots and leafages of these two types in different developmental stages were all related to the distribution of nitrogen, phosphorus and the photosynthetic products, and were restricted by the intensities of photosynthesis and absorbabilities. The differences of the physiological properties among various specific types may be taken

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 51-60]

as the physiological basis for seed selection. The major problems to be considered prominently in the breeding work of sugar beets are the intensities of metabolic activities and photosynthetic properties and the rational distribution of their products. Results of these experiments indicated that the relative ratios of protein nitrogen and total nitrogen, of organic phosphorus and total phosphorus in tuberous roots, of amounts of sucrose and saccharide in leaves, and of weights of leaves and leaf stalks, as well as the dry matter content in leaves, may serve as referential physiological indices for the breeding of high sugar content species.

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TITLE: "The Suitable Region and Disposal of Tea Production in China"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 61-65

TEXT OF ENGLISH ABSTRACT: The tea production regions in China are mainly distributed in Zhejiang, Hunan, Anhui, Sichuan, Fujian, Yunnan, Hubei, Guangdong, Jiangxi, Guangxi, Jiangsu, Shanxi, Henan and Taiwan Provinces, all located south of Qin Mountain and the Huai River. According to the available information and investigation results, they can be primarily divided into four categories:

1. Most optimum region: This includes the hilly and mountainous areas in the southern parts of Nan Mountain, the mid- and lower reaches of the Yuan River and the Lanchen River.
2. Optimum region: This includes the hilly and mountainous areas in the southern parts of the Changjiang River and the surrounding area of the Sichuan Basin.

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 61-65]

3. Sub-optimum retion: This includes the hilly and mountainous areas in the northern parts of the Changjiang River, Qin Mountain and the southern parts of the Huai River.
4. Unsuitable region: This includes the northern parts of Qin Mountain, the Huai River and the western parts of the Dado River.

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WEN Xianfang [3306 6343 5364]
et al.

ORG: WANG Fujun, PENG and LAN, et al., all of Beijing Agricultural University; DENG, WANG Baozhong and WEN all of the Institute for Application of Atomic Energy, Chinese Academy of Agricultural Sciences; et al.

TITLE: "Studies of the Process of Fertilizer-N Absorption in Rice Plants by Using Isotope ^{15}N and on the Effect of the Application of N Fertilizer"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 66-71

TEXT OF ENGLISH ABSTRACT: A field tracer experiment using isotope ^{15}N demonstrated that the rate of fertilizer-N utilization by the total plant was in the following order: from turning green to tillering stage 6.76 percent, from turning green to primordia stage 24.17 percent, from turning green to maximum ear emergence 42.60 percent and from turning green to ripening 40.06 percent.

The content of fertilizer-N and soil-N in rice plants was determined. About

[Continuation of ZHONGGUO NONGYE KEXUE No 4, Aug 81 pp 66-71]

70 percent of plant-N was derived from soil-N and the remaining 30 percent from fertilizer-N. The mineral N-fertilizer from paddy soil during the growing period of rice played a very important role in rice production. Therefore, the problem of how to maintain high soil fertility deserves serious attention.

It was observed that when fertilizer-N was spread on the soil surface, the utilization of fertilizer-N was increased with the delay of application, but the retention of N in soil and loss of fertilizer-N were decreased.

The results of this experiment also showed that with the delay of application of fertilizer-N the percentage of N in rice kernels increased from 65.08 percent to 75.61 percent, corresponding to an increase in fertilizer-N utilization from 19.86 to 39.84 percent. Thus, the earlier the time of N application, the higher the rate of fertilizer-N utilization. However, in rice production it is not sufficient to attain high fertilizer-N utilization only. Consideration must also be paid to the nitrogen nutrition of rice plants in the earlier growing stage, which will result in greater vegetative growth, and moderate fertilization be applied in the later growing stage in accordance with the soil nutrient status.

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TITLE: "Studies of the Life Cycle of Corn Borers and the Effective Accumulated Temperature"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 4, Aug 81 pp 72-80

TEXT OF ENGLISH ABSTRACT: This experiment was conducted under conditions of indoor changeable temperature similar to those of the living environment of corn borers. Based on the observation of the characteristics of the life cycle of corn borers and various instars of the larvae, an index list of larval instars was made, and a minimum squaring was adopted to find the starting point in various developmental stages of corn borers related to the effective accumulated temperature. With the obtained data, we checked the generations of corn borers and their occurrence in various stages. Having proved that our theoretical deduction generally coincided with the practical occurrence, a basis was provided for forecasting the occurrence by effective accumulated temperature and deducting the generations with annual mean temperature.

9717
CSO: 4009/473

Biology

AUTHOR: HUANG Jisheng [7806 6068 3932]
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ORG: Both of the Guangxi Academy of Agricultural Sciences

TITLE: "*In Vitro* Organogenesis of Ramie *Boechmeria nivea* (L.) Gaud"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 81 pp 111-115

TEXT OF ENGLISH ABSTRACT: The present work reports the formation of plantlets from the hypocotyl of Ramie under the influence of different media with various combinations of plant hormones and other natural supplements.

The results indicated that MS and SH media were effective. Addition of BA or ZT (2-5 mg/L) to MS media for inducing the differentiation of shoot buds was better than that of the KT or other auxin (2.4-D, NAA, IAA) used. The emergence of shoot buds apparently was depressed if the auxin (0.2 - 2.0 mg/L) added to MS media annexed with BA. However, natural N-2-amine and other natural compounds added to the media for shoot formation were necessary.

When the induced adventitious buds were transferred into the media which either contained NAA (1.0 mg/L) or were deficient in hormones of 1/2 MS or White media, root systems were regenerated as whole plantlets. The present results provide a possibility for accelerating the vegetative propagation of the Ramie varieties.

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CSO: 4009/491

AUTHOR: ZHANG Cheng [1728 2052]

ORG: Anhui Provincial Bureau of Meteorology

TITLE: "An Investigation on Dryness and Wetness Indices in Anhui Province"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 8, 10 Aug 81 pp 2-5

ABSTRACT: Drought and flood form the major harmful weather of Anhui Province because they occur very frequently. Due to the very uneven nature of precipitation, the rainfall data from month to month may appear normal throughout a certain year, drought and flood would remain a fact of life for durations shorter than a month. After studying records of past 30 years, the author produces the following formula: If there are no 2 consecutive days of less than 0.5mm of rain or no rain in a period of 6-9 days, then an average daily rain of 0.5-10mm causes a minor flood [minor wetness], 10-35mm a large flood, and 35mm and more a specially large flood. If the rainfall is less than 1.0 mm for consecutively more than 15 days, a minor drought [dryness] is created, for more than 22 days a major drought is created. In the winter months (Dec to Feb) precipitation is extremely scarce anyway; therefore, if the total rainfall for the 3 months is less than 30 mm, there is a winter drought in Huaibei [north of Huai River.] These conclusions are the result of extensive computation of historical data. Factors affecting dryness and wetness are only briefly mentioned in the paper.

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TITLE: "Evaluation of Wind Power and Its Distribution in China"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 8, 10 Aug 81 pp 26-28

ABSTRACT: China and all the other countries of the world have had a very long history of utilizing wind power. It needs no fuel or transportation and it does not pollute the environment. There are other difficulties, however. The energy density of wind is only 1/816 of that of water; therefore, to produce the same amount of power, the diameter of a wind driven wheel must be many times the wheel driven by water. Wind energy is also influenced by the climate, the weather, and the topographical factors. The speed of wind is also not steady. One minute it might be too low to drive the machine, in another minute it might be more than 20-27 m/sec and the machine must be shutdown for the sake of safety. Following a preface of general discussion, the method of computing wind energy is introduced. Based upon an effective wind energy density and the accumulated hours of speed greater than 3m/sec, China is divided into 4 regions. The 4th region, including most of Yunnan, Guizhou, Sichuan, all of Gansu, Henan, Fujian, Guangdong, Guangxi, the southern part of Shaanxi, the western part of Hunan, etc. is the only region where wind energy resources are very poor. Effects of local terrain and height and roughness of ground surface on the speed of the wind are very briefly discussed also.

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CSO: 4009/493

Pedology

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TITLE: "Studies of Moisture Regime in Black Soils in Northern Part of Northeast China. IV. Agricultural Techniques for Reserving Soil Water and Improving Water Conditions of Farmland in the Region of Black Soils under Drought Weather"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 203-211

TEXT OF ENGLISH ABSTRACT: In the black soil region, spring drought severely damages wheat but may not damage at all cultivated crops such as soybeans and corn. Therefore, in years of spring drought, less wheat and more soybeans and corn should be planted. Adoption of comprehensive agricultural techniques, including reasonable cultivation system of reserving soil water, correctly using soil water after removing crops, selection of good varieties and rational fertilizing system, may also give a higher yield of wheat even in spring drought years. However, if we want to improve the water condition in black soils perfectly, we should increase the proportion of soybeans and corn in the rotation system and give up the cropping system of wheat-wheat-soybean. In this way we can decrease the soil water consumption in the rotation system and establish a favorable and balanced water cycle in this soil region.

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TITLE: "The Seasonal Variation of Soil NO_3-N and the Effect of Summer Fallow on the Fertility of Manured Loessial Soil"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 212-222

TEXT OF ENGLISH ABSTRACT: Manured loessial soil (Lou soil) is one of the main cultivated soils in the loess region of Shaanxi and Shanxi Provinces of northwestern China. This paper deals with the seasonal variation of soil NO_3-N and the effect of summer fallow on the fertility of "Lou" soil. Field survey, field experiments and periodic tests of permanent plots were carried out. The results obtained are as follows:
1. In the cropping system of summer fallow-winter wheat, the seasonal regime of soil NO_3-N might be divided into five periods annually, i.e., the periods of accumulation, leaching, equilibrium of supply and requirement, supply-requirement discrepancy, and that of sharp discrepancy of supply-requirement of nitrogen.
2. Soil NO_3-N accumulated about 1.18 - 3.30 kg per mu after summer fallow, and leaching depth of soil NO_3-N ranged from 1-2 m below topsoil. The regression

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equation of leaching depth of NO_3-N (Y mm) and rainfall (X mm) during the period of summer fallow was Y = 3.86 X.

3. Soil NO_3-N accumulated after summer fallow could meet the needs of nitrogen for the early growing stage of wheat. Thus the accumulated nitrogen provided a foundation for high crop yield. Yield of winter wheat after summer fallow was 57.5 - 124.0 percent (average 85.3 percent) higher than the yield of winter wheat after autumn crop.

4. In order to promote the favorable effect of summer fallow on soil fertility, attention should be paid to the time, depth and quality of summer plowing. In addition, it is necessary to apply adequate organic manure or quickly plant growing green manure crops.

5. Under the conditions of dry farming, if the rainfall is less than 300 mm in the summer fallow period and the amount of manure is less than 2500 kg per mu, a rotation system of wheat and summer fallow is appropriate; if the rainfall is sufficient (more than 400 mm) and the amount of manure is also sufficient (5000-7500 kg per mu), the cropping index may be increased relatively.

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TITLE: "Studies of the System of Soil Tillage of Paddy Soil in Southern Jiangsu Province"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 223-233

TEXT OF ENGLISH ABSTRACT: Field experiments for comparison of the effect of different tillage methods on rice and wheat yield were carried out in Wuxi County during 1978-1979. The experiments showed that the fertility of the upper part of a plowed layer was promoted and the soil structure was improved more remarkably due to wheat cropping. The traditional method of soil tillage included plowing and harrowing under waterlogged conditions before rice transplanting, therefore the fertile surface soil was always turned over and soil structure disintegrated. Pot experiments showed that mechanical disturbance of soil does not benefit the liberation of nutrients. No tillage after stubble cleaning led to a minimum of soil disturbance, and was beneficial for the maintenance of soil structure of rice growth. Deep plowing in autumn was favorable for wheat growth and improvement of soil structure. Based on the results obtained it is recommended that a more rational tillage system might be no tillage in spring in combination with deep plowing in autumn in this region.

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TITLE: "A Primary Study on the Specific Adsorption of Copper Ion of Paddy Soils in Southern Jiangsu"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 234-243

TEXT OF ENGLISH ABSTRACT: The present paper deals with the effect of the components of paddy soils on the specific adsorption of copper ion and its behavior. The samples used in the present experiment were collected from southern Jiangsu Province, and they were obtained from the cultivated layers of paddy soils derived from lacustrine deposits with pH 6.2 - 6.8. Incubated samples were also used in this experiment. The methods and results of the experiment are summarized as follows:

1. The amount of specific adsorbed copper is the amount of fixed Cu^{++} of soil which cannot be replaced by NH_4^+ ions but may be extracted by 0.1 N HCl. The Δ value of CEC, an expression of the specific adsorption sites in soil, is a reducing value of CEC of soil samples saturated previously with 1 N $CuCl_2$ before determining the CEC by the routine method. The amount of specific adsorbed Cu^{++} minus the Δ value of CEC is termed the "difference value," which is another expression of specific adsorption sites in soils.

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2. The value of CEC was significantly correlated with free iron oxide and amorphous iron oxide. The decrease in Δ value of CEC of samples as results of their deferrization showed a significant positive correlation with the amount of free iron oxide removed. It is indicated that the free iron oxide may play an important role in the specific adsorption site which is expressed as the Δ value of CEC. In addition, the amount of adsorbed copper approached the Δ value of CEC when the organic matter was removed by H_2O_2. It gives more evidence for the conclusion mentioned above.
3. In free iron oxide, amorphous iron oxide is thought to exert the most important effect on specific adsorption because it is more active. It was confirmed by the results obtained from incubated samples that the Δ value of CEC increased with the increasing activity of iron oxide, and there were highly significant correlations between them with a correlation coefficient of 0.865**.
4. The "difference value" showed a significant correlation with organic carbon and complex-iron contents of the incubated samples. In natural paddy soils there was no significant correlation between them. However, there was a highly significant correlation between the "difference value" and the amount of organic material remaining in the residue of deferrized samples. On the other hand, the removal of organic material led to elimination of the "difference value" from the amount of adsorbed copper. These results further indicate that the organic matter is another form of the carrier of specific adsorption of copper expressed as "difference value."

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TITLE: "The Relationships between Organic Matter and Enzymatic Activities and Soil Fertility in Black Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 31 pp 244-254

TEXT OF ENGLISH ABSTRACT: In this paper the basic substances of soil fertility and their variations in black soils with various exploiting periods and various levels of fertility are discussed. The results show that:

1. According to the correlation analyses, soil organic matter has significant correlations with soil N status and CEC. This means that the status and amounts of organic matter have a marked influence on the physico-chemical and biochemical properties of soil, and the activities of enzymes characterize the variations of the status and amount of organic matter to a certain degree. In black soils organic matter is predominant. It is considered that the core of fertility in black soil is organic matter and the activity of enzymes can be used as an important auxiliary index to characterize the level of fertility in black soils.

[Continuation of TURANG XUEBAO No 3, Aug 81 pp 244-254]

2. After exploited, the total amount of organic matter and the amounts of humic and fulvic acids are decreased obviously with the increase of the exploiting periods. The amount of active humic acid is slightly increased in thick black soil and is little changed in meadow black soil in the initial years of exploitation, but gradually decreases after that. Humin, a more stable component of humic substances, also decreases with the increase in exploiting periods. Correspondingly, the activities of all six enzymes tested show a tendency to decrease with the increasing of exploiting periods. However, the activity of polyphenol oxidase in cultivated soils is markedly lower than that in virgin land. As for enzymatic activities, the activities of all enzymes (except those of polyphenol oxidase) are weakened with the depth of both virgin land and cultivated land.

3. In thick black soil, there is a remarkable difference in levels of fertility between fertilized lands and other land. In the former, the total amounts of organic matter and various components of humic substances are higher, the activities of catalase and invertase are higher, and those of polyphenol oxidase and phosphatase are lower than those of the latter.

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TITLE: "A Preliminary Study of the Nutrient Balance of Soil under Chinese Fir Plantation and Broadleaved Mixed Forest"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 255-261

TEXT OF ENGLISH ABSTRACT: The Chinese fir (Cunninghamia lanceolata) is one of the most important timber conifers in China; however, the forest cannot grow well due to soil deterioration resulted from the successive reforestation on the same cutting area of the same species. The present paper deals with the preliminary investigation on the relationship between the nutrition status of soil and reforestation of the Chinese fir.

The results obtained from experiments reveal that, in comparison to broadleaved trees, the Chinese fir takes in more nutrients from the soil and returns fewer nutrients in the form of litter to the soil. In addition, the soil under Chinese fir plantation was liable to be eroded in the early growing stage due to the bare soil surface and intercropping of food crops, whereas under the broadleaved mixed forest almost no erosion was found and the soil fertility tended to be promoted.

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TITLE: "Microbial Degradation of γ-BHC in Soils with Adequate Moisture Content"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 273-280

TEXT OF ENGLISH ABSTRACT: An experiment on the degradation of γ-BHC (r-hexachlorocyclohexane) by microbial populations was carried out using soil samples from orchards and wheat fields in which BHC was applied for many years. It was found that γ-BHC in soils could be degraded more rapidly by soil microbes under the optimum temperature and adequate soil moisture conditions. All of the γ-BHC added to the soil (700 μg/10 g soil) was completely degraded within 56 days under favorable moisture conditions. Microorganisms able to use γ-BHC as their sole carbon source for growth were isolated and counted on a selected medium. It was shown that both in shaking culture and sterilized soil culture γ-BHC was degraded obviously by Flavobacterium sp. 350#, Agrobacterium sp. 70# and Alcaligenes sp. 670#. Within 84 days, 63.1 percent of the γ-BHC applied was degraded by Flavobacterium sp. 350#. It was noticed that the microbes did not transform the γ-BHC into β-BHC, which is more harmful to humans, either in the soil culture or in pure culture.

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TITLE: "On the Alkalization of Salt-affected Soils in Coastal Region"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 281-289

TEXT OF ENGLISH ABSTRACT: A significant concern of agricultural practice is whether alkalization of salt-affected soils in coastal regions occurs after their reclamation. The present investigations both in fields and the laboratory deal with this respect of salt-affected soils in the coastal regions of Jiangsu, Zhejiang and Liaoning Provinces. The results are summarized as follows:

1. In the process of intensive salinization resulting from the action of underground water with high mineralization rate because of the process of Ca^{++} on soil absorbtive complex exchanged by Na^+, the alkalization takes place in coastal salt-affected soil. Its alkalinity is positively correlated with salt content of the soil. Generally, the coastal salt-affected soil does not show the characteristics of alkaline soil due to the influence of a large quantity of neutral sodium salt in the soil solution.

2. Under the process of soil evolution or the conditions of its reclamation and utilization, dealkalization of the soil will take place with the process of desalinization in the soil, which means the decrease of absolute content of

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exchangeable Na^+ on the soil absorptive complex and the decline of alkalinity of the soil. As long as appropriate and reasonable measures of water management, agricultural and forest practice are adopted in accordance with the local conditions, the soil alkalization can be controlled.

3. The phenomenon of increase in soil pH and total alkalinity in the process of desalinization of coastal salt-affected soils should be analyzed from the viewpoint of soil genesis. This phenomenon may occur under the soil desalinization process and alkalization taking place simultaneously, and it may also occur under the processes of dealkalization and desalinization. In the latter case, with the leaching of a large amount of neutral salts, the temporary increase of pH and total alkalinity may be induced by the hydrolysis of exchangeable Na^+ on soil absorptive complex, which just illustrates the beginning of soil dealkalization and not the occurrence of alkalization. Also proved by the data of our investigations is that the alkalinity decreases with the further developing of desalinization of the soil. The dealkalization process occurring simultaneously with the desalinization in coastal salt-affected soils may be related to the $CaCO_3$ and biological activities in the soil.

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TITLE: "A Discussion of Geochemical Characteristics of Main Soil Groups in Northern Hunan Province"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 3, Aug 81 pp 290-299

TEXT OF ENGLISH ABSTRACT: The data used in this paper are obtained from 13 selective soil profiles and weathered parent rocks which were collected from Taoyuan County in northern Hunan Province. A discussion is made on the content of elements, profile differentiation and element loss by eluviation and accumulation of elements of main soil groups. The main soil groups in this area are roughly distinguished into four geochemical types based on the difference in their geochemical characteristics, namely, relic carbonated, weakly ferallitic, ferallitic and old ferallitic types.

Yellow-red earth as a zonal soil is characterized by bioclimatic and geochemical properties in this region. The remarkable eluviation of base, Si, Zn and Ni, accumulation of Fe, Al, Mn, Co, Cu and Cr, and marked differentiation of elements in the profile significantly reflect the geochemical characteristics in the

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formation of this soil, and according to its geochemical characteristics this soil is regarded as being of the ferallitic type in soil-geochemical classification. Of course, there are various soils of different geochemical types in this area due to different processes of soil formation. Therefore, it is of great significance to take the geochemical characteristics into consideration for classification and amelioration of soils.

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TITLE: "First Report of an Outbreak of Parasitic Bronchitis in Water Buffaloes in Jiangsu Province"

SOURCE: Beijing ZHONGGUO SHOUYI ZAZHI [CHINESE JOURNAL OF VETERINARY MEDICINE] in Chinese No 7, 22 Jul 81 pp 2-3

ABSTRACT: In Sep-Dec 79, parasitic bronchitis occurred to 73 heads of water buffaloes among a herd of 136 heads at a water buffalo breeding farm of a certain commune of Gaoyou County, Jiangsu Province. In the course of the outbreak, 15 heads died of the disease. Dissection revealed parasitism of Dictyocaulus viviparus, a nematode of the Dictyocauludae family, in the lungs. This parasite had been previously discovered among yellow oxen in China in such regions as Beijing, Xinjiang, Gansu, Ningxia, Qinghai, Shaanxi, Guizhou, Sichuan, Neimeng, Zhejiang, Fujian, Hubei, Guangdong, Guangxi Zhuang Nationality Autonomous Region, Yunnan, etc. In 1961, there was a report of discovery of the parasite in the lungs of one water buffalo among 29 examined in Wuhan. An outbreak of this size was, therefore, the first among water buffaloes. Clinical symptoms and treatment procedure are described. Preventive measures and diagnostic technique are also discussed.

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TITLE: "Influence on Growth and Sexual Function Following Injection of Androgens in Newborn Piglets"

SOURCE: Beijing ZHONGGUO SHOUYI ZAZHI [CHINESE JOURNAL OF VETERINARY MEDICINE] in Chinese No 7, 22 Jul 81 pp 4-6

ABSTRACT: Barraclough (1958), Gorski et al (1963), Jacobsohn (1964) had all reported effects of testosterone propionate in suppressing sexual maturity, weight gaining etc. on mice, but there have been no reports of the effects of such androgens on domestic animals. From Oct 78 to Jun 79, and again from Aug 79 to May 80, the authors carried out experiments with 78 newborn piglets. Within 24 hours after birth, testosterone propionate was administered in muscular injection (100 mg per piglet). A control group was established under identical feeding conditions to form the first experiment. Doses of either 100 mg/head or 200 mg/head were used for the second experiment. No suppression of sexual development was detected among the male or female piglets. Histological observation of the testes did not reveal any abnormality. The weight gain result was statistically significant in the first experiment but was less than apparent (7.9 percent heavier than the control) in the second experiment.

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